The Business Journal of Vegetation Management February 1979/$1.25

WEEDS TREES & TURF

Turfgrass performance in Blends and Mixtures

Industrial Brush and Bare Ground Herbicides

Preparing Baseball Fields: East and West

Crushed Brick Is Worked Into Skinned Area

The seed that's changing the face of America.

Pennfine Perennial Ryegrass

The biggest breakthrough in the greening of America began in 1970. That's when turfgrass specialists at Pennsylvania State University completed development of a remarkable fine-leafed perennial ryegrass with all the advantages of ryegrass. And none of the drawbacks. They called it Pennfine.

Now, just six years later, the success of their undertaking is evident. On golf courses and athletic fields. In parks and cemeteries. And on public grounds across the country.

Proven in tests. Among the nine perennial ryegrasses tested over a five-year period at University Park, Pennsylvania, Pennfine ranked finest in texture. Most resistant to disease. First in density and decumbency (low growth).

The University Park test results were only the beginning. Over 5,000 test kits with seed samples were distributed over the entire country in answer to requests from turf professionals wanting to test Pennfine. The results confirmed the University Park findings.

Most importantly, Pennfine established a new standard of mowability. Some other perennial ryegrasses, cut with the same mower, left ragged, fibrous tops that quickly turned brown. Pennfine's softer fibers cut smooth and clean.

Proven from coast to coast, from North to South. Pennfine's durable beauty has been demonstrated at prestigious sites all over America. From the lawns at an historic national landmark to the greens at a nationally-renowned golf course.

Besides possessing the ability to stand up under heavy traffic, Pennfine germinates rapidly. That makes it ideal for winter overseeding in the South. And, its non-competitiveness allows a smooth spring transition to bermudagrass.

Proven quality control under the Plant Variety Protection Act. You can be sure that all Pennfine Perennial Ryegrass meets the same high standards, because Pennfine is covered by the Plant Variety Protection Act.

That means every pound of Pennfine is certified. You are assured, by law, that it's produced exactly as intended by the original variety breeder.

Prove it to yourself. To learn more about how Pennfine is changing the face of America—and how it can work for you—write: Pennfine, P.O. Box 923, Minneapolis, MN 55440.

Pennfine
PERENNIAL RYEGRASS

The best thing growing.

Circle 133 on free information card

JOHN DEERE TURF TRACTORS— any way you cut it

Gang mowers, rotaries, John Deere sicklebar or flail types—we have the tractors to match your equipment, turf, terrain and work schedules. Three horsepower classes, (43, 50 and 62 SAE net) and a wide choice of tread widths and tire options bring landscaping and turf maintenance jobs down to size fast.

Standard equipment includes an 8-speed transmission, inboard planetary final drives sharing the filtered transmission oil bath, and sealed, self-compensating, self-adjusting wet-disk brakes.

A rear PTO is standard on 62-hp machines, optional on all others. Power steering, on-the-go differential lock and ROPS are other choices high on the list.

For landscaping and site finishing, the John Deere 3-point hitch offers many exclusive advantages that help ensure the best performance with rear blade, scarifier, box scraper or rake, for example. A folding lever adjusts and locks the center link easily, and anchors it out of the way when not in use. Hydraulic Load-and-Depth Control automatically compensates to help maintain working depth and engine rpm. Lift links can provide a vertical float action to follow ground contours; sway blocks are included to snub side-to-side tool movement. A Quik-Coupler is available to speed the change from one rear tool to another.

See your John Deere utility equipment dealer—he has both the ideas and the product support programs to match his turf and landscape equipment. John Deere, Moline, Illinois.

JOHN DEERE

JOHN DEERE on the move

WT&T

CONTENTS

FEBRUARY 1979/VOL. 18, NO. 2

Bruce F. Shank
Editor
Ron Morris
Technical Editor
Robert Earley
Contributing Editor
Scott Scredon
Assistant Editor
Dan Moreland
Assistant Editor
Ray Gibson
Graphics Director

Hugh Chronister
Publisher
Richard J.W. Foster
General Manager
David J. Slaybaugh
Executive Editor
Dick Gore
National Sales Manager
Clarence Arnold
Research Services
Patricia J. Kelley
Production Manager

HARVEST

Copyright© 1979 by the Harvest Publishing Co., a subsidiary of Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be transmitted or reproduced in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher. Address: 9800 Detroit Ave., Cleveland, Ohio 44102.
Single copy price $1.25 for current and back issues. Foreign $1.50. Subscription in the U.S. and Canada are $12.00 per year. $15.00 in other countries. Foriegn air mail optional at an addtional $24 per year. Controlled circulation postage paid at Cleveland, Ohio 44101. Postmaster: send form 3569.

Member, American Business Press, Business Publications Audit, National Golf Foundation. American Sod Producers Association, National Landscape Association.

NGF BPA SBPE

Viewpoint 9

GREEN INDUSTRY NEWS

Greenhouse Heat Economics Studied . . . Agriculture Secretary Bergland Says Organic Wastes Make Incomplete Fertilizers . . . Florida Turfgrass Association and New York Nurseryman Announce New Officers 11

FEATURES

Cultivar Performance in Blends and Mixtures
The Lawn Institute's Director Dr. Robert Schery covers in-depth the performance of the primary turfgrass cultivars when part of blends and mixtures. Good overview of U.S. and European research of the past 40 years. 16

Baseball Field Preparation — East and West
Cal Poly's Dr. Kent Kurtz and Rutger's Dr. Henry Indyke review procedures for preparation of skinned areas, infields, and outfields for spring play. 26

Herbicides for Brush and Bare Ground Use
A list of today's nonselective and brush herbicides as well as general guidelines for safety and use. 36

Asplundh Role in Rights-of-Way Clearance
One of the oldest and biggest rights-of-way contractors, Asplundh Tree Expert Co., offers advice on weed control around utility poles and substations. 54

Suburb Uses Growth Regulator to Increase Mowing Efficiency
A Boston suburb has trimmed mowing costs by using growth regulator on roadsides, cemeteries, and parks. 60

Trickle Irrigation Benefits a Michigan Nursery
A Michigan nurseryman tells how his use of trickle irrigation has controlled root and tree growth. 63

Proscape 72

Vegetation Management 79

Products 81

Classifieds 90

Events 96

Advertiser Information 98

Wherever annual weed

"Out here, crabgrass is our biggest complaint, and Balan in the spring works like a charm."

"Around these parts, we're faced with goosegrass/ crowfoot in the summer, then when our Bermuda-grass goes dormant, Poa annua's the problem. So we use Balan twice."

"Sometimes we use Balan in the early spring for crabgrass, but if goosegrass is a problem we apply Balan later to get it as it germinates."

"If you've a goosegrass/crowfoot problem, a shot of Balan early in the summer takes care of that problem; but nothing makes our courses look worse than green patches of Poa after the Bermuda's gone dormant, so we apply Balan in the fall, too."

...the solution is Balan

The annual grass problems may differ from one part of the nation to another, but the solution is the same . . . Elanco's Balan. All across the country, Balan users have proven for themselves that a regular Balan program is their most effective means of controlling the hard-to-control annual weed grasses. Balan's granular form makes it as quick and easy to apply as fertilizer.

grasses are the problem...

"Around here, our main problem is crabgrass in the fairways, so we use Balan in the spring. It's so economical we treat fairways and the roughs."

"Almost every course in the South has two main weed grass problems: Poa annua and goosegrass/ crowfoot. Two applications of Balan gets rid of them both."

"Plain old crabgrass is the biggest problem around here. Balan is so economical we put it on all our fairways in the spring before germination."

Balan is the dependable, economical pre-emergent that kills weed grass seeds as they germinate, allowing the desirable grasses to fill in. Name your weed grass problems . . . crabgrass, goosegrass, Poa annua or foxtail. Balan's the practical solution. Order Balan from your Elanco Distributor today.

ELANCO

Balan®

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455
Indianapolis, Indiana 46206, U.S.A.

Embark® Plant Growth Regulator Puts You In Command—

*Read label instructions carefully before application.

"Embark" is a registered trademark of the 3M Company.

Slows Turf Growth When and Where You Need It.

This spring and summer, you decide when to send your mowers into action!

"Embark" Plant Growth Regulator reduces turf growth without injuring grass or inhibiting root development. That means less mowing and more time for other jobs.

A spray application of "Embark" Plant Growth Regulator on actively growing turf lasts up to eight weeks.

For hard-to-mow areas—roughs, along fences, highway embankments—"Embark" Plant Growth Regulator keeps most commonly-grown species* of grass on hold. Saves equipment and labor. Plus takes the pressure off a busy season.

This year make "Embark" Plant Growth Regulator part of your turf management. It's the common sense way to cut mowing and trimming costs.

Distribution of "Embark" Plant Growth Regulator for commercial turf is planned for many areas of the country this season. For a listing of "Embark" Plant Growth Regulator distributors in your area, write: Agrichemicals/3M
223-6SE, 3M Center
St. Paul, MN 55101

3M

Circle **176** on free information card

VIEWPOINT

Bruce Shank, Editor

A recent editorial on landscape industry trade journals by Morton Herrman, president of the California Landscape and Irrigation Council, in its publication the Professional Landscape Contractor brought up a number of controversial points.

As editor of a landscape industry trade journal, I'd like to answer some of Herrman's charges. First, you can read what he had to say, and then I'll tell you what I think.

Industry neglected

"I feel that our segment of the industry has been sadly neglected by the California-based trade publications. For one reason or another their editorial staffs seem chain-bound to their desks, and are reluctant to pick up their telephones or leave their offices to find out what's happening in the industry. They seem more dedicated to soliciting advertising than in serving the needs of their readers in the landscape design and contracting professions. When was the last time you saw a story about an imaginative landscape construction project, or any kind of relevant, in-depth story on a landscape contractor or architect in one of our commercial trade publications?" *Herrman.*

Mr. Herrman's remarks should not be limited to California-based publications. He is right, to a great extent we are chained to our desks by the size of the task on hand and the staff available to do it. Trade magazines in the Green Industry rarely have more than two full-time editors. But, there is no excuse for not using the phone. We estimate that road time costs $750 per week, a significant sum for any organization. We have to use it where it makes the most impact, such as for major trade shows. In 1979, however, we plan to attend more regional shows to improve our ties with regional interests.

Trade magazines can very easily forget the reader and become solely a tool for advertisers. This is why a trade magazine should have completely separate sales and editorial departments. The editor must defend his professional goal to serve his readers at all times. But, you should remember that without advertisers there are no trade magazines. Subscriptions, although very important for magazine stability, usually represent less than ten percent of gross revenue. You can't disregard 90 percent of your business, can you?

I agree that the landscape contractor has not received worthy coverage at times in the past few years. We have made a concerted effort to cover problems affecting landscaping contracting this past year and profiled at least four firms. Please read the articles on the landscape contractor/architect/nurseryman relationship in 1978. The architect has a fine publication through the American Society of Landscape Architects. The Associated Landscape Contractors of America has made great strides in serving the specialized needs of contractors through new affiliation with state and regional associations. Perhaps California should strengthen its ties with the national groups and stop depending on state publications and groups entirely.

Culture not our concern

"I get so bored with the endless parade of tedious articles on turfgrass culture and rare ornamental diseases. How much more can you say about a blade of grass that hasn't been said before? We let the growers worry about plant culture and all those dreaded, little-known diseases. If a problem shows up on one of our landscape jobs, we call the grower who sold us the stuff, or some other professional who is far more qualified to diagnose and solve the problem than we are." *Herrman.*

A contractor who installs only and leaves the problem solving to someone else is making a terrible personal and professional mistake. Asking for help when needed is one thing, but leaving all "culture" to others goes against the principle that a person should strive to know all there is to know about his field. You are not a plumber or electrician who can install and forget. You are dealing with living organisms which are complex and susceptible to disease and insect attack, not inert wires and pipe.

Many people feel offended by seemingly over sophisticated articles written by our major extension agronomists and arborists. For this reason we try to rephrase such research in staff written material. Researchers are learning to write more on an understandable level, but they can't change overnight. They want to help and get their findings to as many readers as possible. However, it would be wrong to restrict this material to research journals only. Many readers need it.

You may pass the buck to the grower, but the general contractor is looking to you for answers. You must at least be able to make a general diagnosis to know which expert to call.

I greatly disapprove of layering knowledge in landscape contracting or any turf and tree field. There is a great deal to know about a blade of grass, especially when improved turfgrass varieties are considered. The contractor has to ask the grower for improved turfgrass in sod, not the other way around. When a certain tree species fails to survive in your area more than 20 percent of the time, you are the one to alert the growers and to signal a need for research on the problem.

The future of landscape contracting is in broadening knowledge, not dividing it. The design/build firm, the nurseryman contractor, and the arborist contractor are doing well today because they offer the most from a single source for customers. To grow in this way requires a vast amount and breadth of information. This information is what we, as trade editors, are trying to provide. Reject it if you like. But many readers want it, need it, and ask for more. **WTT**

There are 785 different tree species...

And they all thrive on Ross Super Tree Stakes and Ross Super Fruit Tree Stakes!

Dependable **Ross Super TREE STAKES** provide once-a-year feeding of trees, shrubs, and evergreens with a high food value analysis of 16-10-9 PLUS iron and zinc formulation.

New **Ross FRUIT TREE STAKES** contain 16-5-10 PLUS iron and zinc to provide precise, pre-measured feeding of all fruit trees: apple, pear, apricot, plum, peach, cherry, all citrus, berries and fruit bearing shrubs.

Each commercial case contains approximately 155 stakes . . . enough to feed more than 35 trees of 3″ diameter. There are 20 solid nylon pounding caps to simplify driving into the toughest soil.

For best results, place stakes at drip line of tree, using three stakes for every 2″ of trunk diameter. Water does the rest, carrying plant food to the feeder roots.

Two great once-a-year formulas . . .

- **16-10-9 For Beautiful Trees & Evergreens**
- **16-5-10 For bigger, better Fruit**

Contact your nearest Ross Daniels distributor for Ross Super Tree Stakes and Ross Super Fruit Tree Stakes. If unavailable in your area, order direct from: ROSS DANIELS, INC., P.O. Box 430, West Des Moines, Iowa 50265. Use this coupon to order.

ROSS Super Tree Stakes
Commercial Pack,
Stock no. 1791
Please ship _____ cases,
check enclosed.

ROSS Fruit Tree Stakes
Commercial Pack,
Stock no. 1812
Please ship _____ cases,
check enclosed.

Approximately 155 stakes per case, weight 44 lbs.
1-3 cases, $35.00 per case
4-11 cases, $30.00 per case
12 or more cases, $25.00 per case
Each case includes
20 Nylon Pounding Caps

Your name_____

Organization_____

Address_____

City_____ **State**_____ **Zip**_____

Make check payable to Ross Daniels, Inc.

Circle **124** on free information card

GREEN INDUSTRY NEWS

GREENHOUSE

Focus continues on economical heat

Dependence upon fossil fuels for greenhouse operations could be greatly reduced if researchers continue to make progress in developing ways to heat greenhouses with solar energy, according to Professor Louis D. Albright, agricultural engineer at the New York State College of Agriculture and Life Sciences at Cornell University.

Albright is hopeful up to 80 percent of the heating needs of greenhouses could be met with solar energy. The greenhouse industry currently spends more than a quarter of a billion dollars per year in fuel costs to heat about 10,000 acres of greenhouse space.

In an attempt to combat rising fuel costs Cornell researchers are developing a four-part system to heat greenhouses more economically. The system consists of the use of night covers, water bags, variable night temperatures, and a computerized environmental control unit which would automatically combine a number of energy-saving devices.

The researchers have already succeeded in reducing nighttime heating needs by as much as 90 percent by covering plants with a multilayer, high-insulation night cover called a "thermal blanket."

The blanket consists of five layers of cloth covered with aluminum foil. The air space created between the layers insulates the plants from the cold. The bag could provide a 67 percent savings in overall fuel consumption, according to Albright.

A second cover, designed to enclose the sides of the plant, is made of layers of cloth and a sheet of plastic containing air bubbles. The covers are drawn over and around the plants and provide an insulation R-value of 10 to 11, Albright said.

The researchers are also testing long plastic water tubes, called Q-Mat, designed to collect and store solar energy during the day and help heat the greenhouse throughout the night. The so-called "water bags" are placed between rows of potted plants, actually touching the pots, and can be easily adapted to a wide variety of greenhouse growing systems, according to Albright.

"It functions as a collector, a thermal storage, and a retrieval heat exchanger, all in one. Calculations show that the device could meet night heating needs, except those nights following very cloudy days," he said.

The third phase of the research involves studying the affects night temperature variations have on plants. In three tests with lettuce where temperatures were programmed to decline steadily from 77° to 59° during the night, researchers found the plants did just as well as when the termperatures were constant.

"The night temperature variation already tested is a big step in the direction of conserving energy and making greater use of solar energy," Albright said. "With the lowest greenhouse temperature at dawn, coinciding with the lowest outside temperature, late night heating needs are decreased."

In the final phase of the study researchers are developing a computerized environmental control system containing a microprocessor which would automatically combine the three energy saving devices already mentioned. A prototype of the control system is expected to be developed within a year and researchers at Cornell are hoping to construct two identical greenhouses in 1979 to test all four components in an integrated system.

"In effect, the greenhouse will become a programable plant growth chamber, resulting in more efficient use of solar energy," Albright said.

INSECTS

Natural control found for Japanese beetle

An extremely potent natural control for the Japanese beetle has been discovered in the seed of the Indian-African neem tree, according to Dr. Thyril Ladd, of the USDA Science and Education Administration's Japanese Beetle Research Laboratory in Wooster, Ohio.

Neem said the oilseed extract, which has a garlic-like odor, repelled a group of beetles so strongly that they starved before taking a bite of sassafras leaves applied with the extract. The beetles were also repelled for 14 days from soy beans treated with the extract, while untreated plants in the same field were totally consumed.

Dr. Ladd said the seed extract "is a natural material and is not expected to be a hazard to the environment." Although there are only two neem trees known to be growing in the United States, one in Miami and the other in Coral Gables, Fla., there is a good possibility the tree will grow well in southern Florida.

TURFGRASS

Disease meeting to be in Columbus, Ohio

Cosponsored by Ohio State University, the Ohio Agricultural Research and Development Center and Chemlawn Corporation, A SYMPOSIUM ON TURFGRASS DIS-

EASES will be held at the University Holiday Inn in Columbus, Ohio on May 15-17.

Leading turfgrass disease specialists from the United States and Canada have agreed to participate. Anyone interested in current problems associated with control of turfgrass diseases is welcome to attend and should benefit from the speakers' comments.

The proceedings of the meeting will be published and should serve as a valuable reference on turfgrass diseases. For further information, write: A SYMPOSIUM ON TURFGRASS DISEASES 1979, 2865 E. Orange Rd., Galena, OH 43021, or call: Dr. P.O. Larsen at 614/422-6987 or Dr. B.G. Joyner at 614/885-9588.

TURFGRASS

Pest slides available from NY Turf Assoc.

Two 35-millimeter slide sets, one concerning turfgrass insects of the Northeast and the other about turfgrass diseases, are available from the New York State Turfgrass Association.

Dr. Haruo Tashiro of the Cornell University Agricultural Experiment Station developed the 76-slide program concerning turfgrass insects and Dr. Richard Smiley, also of Cornell, compiled the 66-slide set about the identification and control of turfgrass diseases.

The sets can be purchased from NYSTA at a cost of $20 for New York residents and $25 for out-of-state residents. Checks should be made payable to the New York State Turfgrass Association and mailed to Ann Reilly, Executive Secretary, 210 Cartwright Blvd., Massapequa Park, NY 11762.

WEED CONTROL

Changes in Ronstar G for poa, application

A label change that allows late summer or early fall application and an improved granule size should help turf managers in their fight against turf weeds, especially poa annua, with Chipco Ronstar G, according to Rhone Poulenc.

Preemergent application during the fall, when poa annua germination is heaviest, will allow those who consider it a weed to regain control. The new granule size will make application more precise and will minimize dust.

The herbicide is recommended for premergence control of germinating crabgrass, poa annua, goosegrass, Florida pursley, oxalis, stinging nettle, carpetgrass and pigweed. It can be used in established stands of perennial bluegrass, bermudagrass, perennial ryegrass and St. Augustinegrass.

It is available as a two percent granular formulation in 50 pound bags. The rate for turf applications is 200 pounds per acre of the two percent formulation. Additional information may be obtained by contacting Rhone-Poulenc Inc. Ag Division, P.O. Box 125, Monmouth Junction, NJ 08852.

TURFGRASS

High salt, pH tolerant grass found in Colorado

A new perennial grass variety that could be on the market as early as this year, thrives in situations where the soil pH is a very high, salty 8.2-8.5

Fults *Puccinellia distans* is intended initially for use along highway rightofway and roadside boulevards. There are also plans for use of the variety on fine turf areas such as golf courses with salty soils, or places that have alkaline irrigation water.

Northrup King Co., Minneapolis, presently has production and marketing rights. The company is contemplating seeking Plant Variety Protection under federal law.

Fults was discovered when Stan Metsker, then superintendent at the Boulder Country Club, Boulder, Colo., noticed patches of a grass growing in salty areas of the fairways. Professor Jesse Fults of the Colorado State University Weed Research Lab, identified the grass as *Puccinellia distans*, and was responsible for the initial collecting, purification and seed increase of the variety. The grass was ultimately named after Professor Fults.

Fults has been seeded in roadside trials in Wisconsin, Iowa and Illinois, and has shown excellent persistence in salty areas where even tall fescue has failed to survive, according to Larry Vetter, manager of the Professional Turf Products Division for Northrup King.

A seed mixture for fine turf areas could also include Fults, plus Kentucky bluegrass, fine-leaved perennial ryegrasses, and/or fine fescues such as the salt-tolerant Dawson red fescue, Vetter added.

He said that a combination of these species willl provide quick cover, good turf quality, and long-term persistence. It can also be seeded with bentgrass. Fults is expected to have uses on golf courses in areas where irrigation water is highly alkaline.

Fults is a low-growing bunch-type grass. Maximum unmown height, inclusive of seed heads, is between 12 and 16 inches. Plants are leafy and the leaves narrow. The color is dark green, which tends to darken on alkaline soils.

ASSOCIATION

New York Nurserymen elect new officers

Henry Weller, Congdon & Weller, North Collins, was elected president of the New York State Nurserymen's Association at the annual meeting, January 11.

Jack Lander, Jack Lander's Landscaping, Newburgh, was elected first vice president and Arthur H. Steffen, Arthur H. Steffen, Inc., was elected second vice president.

Frank Ferraro, Bianco & Ferraro, Washington Mills, is the new treasurer. Secretary is James Cross, Environmentals, Inc., Cutchogue. Alfred Krautter, Sprainbrook Nursery in Scarsdale, is director-at-large.

ASSOCIATION

Florida Turf-Grass elects new officers

Members of the Florida Turf-Grass Association recently elected new officers at their 26th Annual Conference and Show in Orlando, Fla.

Those elected to serve in 1979 were C. Wayne Sloan (president), Harvey E. Phillips (vice president), and James D. Carter (secretary-treasurer).

Sloan is assistant vice president of community facilities for Gulfstream Land & Development Corp., Phillips is superintendent of the Belleview Biltmore Hotel & Golf Course, and Carter is president of Bingham Seed Co. Six directors were also elected at the conference.

THE BIGGEST VALUE IN CONTROLLED RELEASE NITROGEN!

Magnification of sulphur coated urea granule

If you're a lawn applicator . . .

If you're not using Sulfur Coated Urea . . .

READ THIS!

Then call us toll-free at:

East of the Mississippi

1-800-321-5951

In Ohio Dial 1-800-362-7413

Or Call Collect 216-323-7544

If you're a lawn applicator and you're not using LESCO 36 Sulfur Coated Urea in your program, it's costing you money, it's costing you performance, and maybe it's costing you customers.

LESCO 36 Sulfur Coated Urea is a giant leap for turf management. This controlled release nitrogen source delivers a guaranteed minimum of 36% nitrogen and 12% sulfur. Between 10 to 20% of the nitrogen is available within the first 7 to 10 days, with the remainder available over a period of several months. This means quick greening, sustained feeding and reduced application costs. And because you buy from Lakeshore, you buy from the manufacturer. And that means quality and savings.

If you are a truckload buyer, take advantage of our toll-free information service and call Barb today. She'll have our representative contact you immediately. Those east of the Mississippi can reach her by dialing 1-800-321-5951. (In Ohio, dial 1-800-362-7413.) If you're west of the Mississippi, call Barb collect at 216-323-7544.

Take that small step and call today. We'll be glad to tell you about LESCO 36 and our other fine LESCO Products, such as LESCOSAN (Betasan*), the liquid pre-emergence crabgrass control that outsells all the competition. Our LESCO Quality Products and Friendly Service are always as close as your phone.

*(Betasan—Registered TM of Stauffer Chemical Company.)

LESCO PRODUCTS

Division of Lakeshore Equipment & Supply Co.

300 S. ABBE ROAD, ELYRIA, OHIO 44035

A FAMILY OF FINE PRODUCTS—Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—Lescopar—Lescopex—Lesco Non-Selective Herbicide
Lesco MSMA—Lesco Thiram 75W—Lescozyme—Lakeshore Chinch Bug & Sod Webworm Control

Circle **168** on free information card

55 Years and over 5 million trees

Cottage Gardens INC.

SOUTH WAVERLY & BISHOP ROADS
LANSING, MI 48910
PHONE (517) 882-5728

Circle **172** on free information card

Vermeer Stump Cutters: Chew Out Ugly Stumps Without Eating Up Budgets

Stumps. You can burn them. Bulldoze them. Saw them. Or, chop them. But if you really want to remove them efficiently, sink some teeth into your stump removal program with the Diggin' Dutchman's patented Stump Cutters from Vermeer.

They're quick. They're easy to operate. They're economical. Five hydraulically operated models to fit any size operation. Each equipped with a powerful cutting wheel that **can** dig them out . . . in minutes. In one trip. With one operator. On virtually any stump around. Vermeer Stump Cutters . . . widely used by cities, parks, cemeteries, golf courses, landscapers, utilities and tree service firms everywhere. Ask your Vermeer dealer for a demonstration today. You'll be glad you did.

Vermeer

6302 New Sharon Road • Pella, Iowa 50219 • (515) 628-3141 • Telex 478-309

Circle **130** on free information card

FERTILIZER

Organic waste said to be incomplete

A report recently released by Secretary of Agriculture Bergland says most organic wastes are incomplete fertilizers and must be supplemented.

Stressing the value of organic waste for controlling erosion and improving tilth, the report concluded that it cannot provide enough nitrogen, potassium and phosphorus.

The majority of wastes used are animal manures and crop residues. Other organic wastes, including sludge, and municipal and industrial, are not used according to the report.

LANDSCAPE

Management clinic to be in Louisville, Feb. 18

The Landscape/Garden Center Management Clinic will be held at the Galt House in Louisville, Ky. Feb. 18-21.

The clinic will feature a wide variety of activities including panel discussions, speeches, award presentations, new product exhibits, and audio/visual presentations.

A number of prominent individuals in both the landscape and garden fields are also scheduled to speak at the clinic. Landscape architect and author Gary O. Robinette will discuss "Landscape Design to Reduce Maintenance Needs," Paul Uenaka, of the Springdale Garden Center in California, will cover "Professionalism in the Garden Center Business," and Dave Bowen, of High Yield Management in Boulder, Colo., will discuss "Motivating Employees for Profit."

Pre-registration fee is $70 per person for the total four-day program and $55 for the two-day landscape and garden center clinics. Registration at the clinic costs an additional $5.

The clinic is being co-sponsored by the National Landscape Association and the Garden Centers of America.

For further information contact the Landscape/Garden Center Management Clinic, 230 Southern Building, Washington, D.C. 20005.

Working 2 Shifts.

Whether it's in open sun or moderate shade, Glade Kentucky bluegrass produces beautiful lawns.

Under trees, beside buildings, in up to 60% shade Glade produces deep green turf; has a higher level of resistance to most races of powdery mildew, stripe smut and leaf rust.

Planted in open sun, Glade goes to work the same way. Germinates quickly, establishes fast, forms a thick rhizome and root system, resulting in dense, low-growing turf. Glade Kentucky bluegrass has better than average resistance to today's Fusarium blight, works as a vital fortifying ingredient in many professional turf grass mixtures. Glade Kentucky bluegrass is a Rutgers University selection (tested as P-29). Its name is your guarantee of physically pure, genetically true seed.

Specify Glade Kentucky bluegrass, available at your local wholesale seed distributor. It works 2 shifts, sun and shade.

Glade

KENTUCKY BLUEGRASS

U.S. Plant Patent 3151

Another fine, quality-controlled product of Jacklin Seed Company.

CULTIVAR PERFORMANCE IN SOD BLENDS AND MIXTURES

Dr. Robert W. Schery, The Lawn Institute

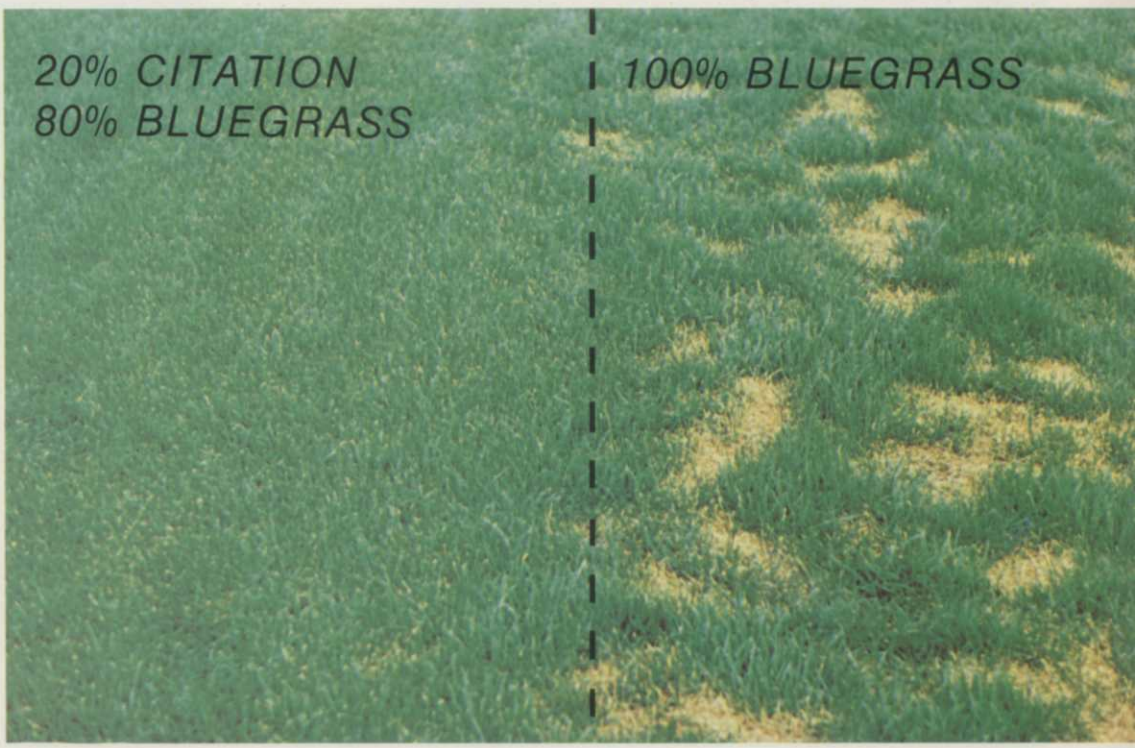
The modern-day sod grower not only must be a good businessman, but he should have sophisticated appreciation of trends within the industry. One trend gaining momentum is the planting of top-flight proprietary cultivars, marketed as seed of exceptionally high quality ("sod quality" is the watchword for premium quality seed in the trade). With a wealth of proprietary cultivars from which to choose nowadays, blends (multiple cultivars of a single species) and mixtures (multiple species) are more and more employed. In the Chicago area, perhaps nearest thing to birthplace for the modern sod industry, Ben Warren confirms that almost all sod is blended today, although not many years ago it consisted almost entirely of a Merion monoculture.

Both artistry and practicality are involved in sod production; combinations must reflect costs, but even more so performance of the end product. While most sod purchasers know rather little about individual lawngrass cultivars, they are appreciative of sod quality. Sales advantage does accrue from the publicity constantly being accorded the new proprietary cultivars. Thus some "pull" results from demand for elite grasses, although equally important is the "push" provided by sod growers wishing to demonstrate leadership. In any event, no longer is there only Merion, but rather a swelling list of topflight cultivars (table).

The blend and mixture concept

Utilizing a diverse assortment of genetic strains for turf is not a new idea. Indeed, nature has employed a mixture of species since time immemorial in her native prairies. And for years seedsmen have combined species for home lawn seeding, better to provide some grass suited to varying conditions, knowing that the typical home owner is not expert on what to choose specifically. Thus there has been some ryegrass for quick cover, some fine fescue for shade, along with bluegrass as a sod-forming basic. Independent opinion from college extension has always backed this idea, in realization that a monoculture is difficult to maintain without professional management. Throughout Europe mixtures are standard for seeding wear-tolerant athletic fields, and reports abounded at the most recent International Turfgrass Research Conference on mixtures and blends. Thus theory and practical results seem to concur, and lawn-seed mixtures enjoy widespread usage.

As demand for lawn quality increased, conflicting eddys occurred in the stream of progress. Monocultures of elegant types, especially Merion, became "high fashion", although they are the most difficult to keep impeccable. Style called for uniformity, practical wisdom for diversity! Old-time "common" grasses carried a good measure of genetic variability within them, harvested as they



Research by Jacklin Seed Co. and Turf Seed shows some evidence of disease reduction by including perennial ryegrass in a bluegrass mixture.

were from an assortment of locations and biotypes. But a single selection, chosen for especial elegance and perpetuated apomictically (i.e. almost all seeds carrying the same heredity as the parent plant), risked an epidemic from any weakness that might surface. A new strain of disease, for example, could spread like wildfire, wiping out the population. Dr. A. J. Turgeon of Illinois, in his presentation to the Third International Turfgrass Conference in Munich in 1977, pretty well sums up prevailing opinion.:

> "Combining different turfgrass species and cultivars provides a turf with a broader genetic base than where single cultivars are planted alone. The presumed benefits of mixtures and blends include: better adaptation to local environmental conditions and a reduced potential for disease development. The disadvantages are: reduced uniformity of the turf and the eventual dominance of one component grass in some cases."

Of course the solution has encompassed a two-fold approach. First of all, newly bred varieties are screened for tolerance to commonplace ills. Thus modern cultivars are by and large not only better-looking, but more disease-resistant, denser, lower-growing, and all-around better adapted for lawns than were the old pasture-type common grasses. Secondly, two or more cultivars (as well as mixtures of species) are mechanically blended to introduce genetic diversity. It is not difficult to come up with compatible cultivars which give the illusion of single-strain monoculture, but which carry a goodly degree of assurance against epidemic disease or other threats to performance. It seems as if the future lies in this direction for the sod industry.

Practicality of operations

Theory favoring blends and mixtures is well and fine, but a sod grower needs to know just what combination is best for his particular operations. Hard and fast answers are few and far between. Even where a cultivar is well known, as with Merion, slight changes in soil, environment, or weather can materially alter outcome. I recall the early experiences at Rutgers University when Merion and Fylking bluegrasses were planted in combination. With adequate fertilization, aggressive Merion seemed on the verge of squeezing unaggressive Fylking out of the stand, — until along came stripe smut and turned the tables. It well may be that if two cultivars are so very much alike as to be all but indistinguishable, that in time one will drive the other out of the population (a principle of ecology, the law of competitive exclusion, states that two quite similar organisms cannot co-exist indefinitely in a stable environment). Under standardized lawn maintenance perhaps the greatest advantage from blends comes in the initial years, after which the grass population will become dominated by one or another cultivar that has proven supremely successful under prevailing conditions? But since we can't predict which cultivars will triumph any better than we can foretell the weather or chance of new strains of disease, it makes sense to start a "full field" of candidate grasses, letting survival-of-the-fittest make the decisions.

Turf experts attempt to recognize cultivars for their compatibility in blends. Ordinarily, it would seem inadvisable to combine an aggressive cultivar with an extremely weak competitor. Michigan State experts recommend for blending only "strong" cultivars that resist all diseases (viz. Adelphi, Majestic, Touchdown bluegrasses, for example). New Jersey recommendations call for at least one cultivar in a bluegrass blend to have leafspot and stripe smut resistance. But I am amazed constantly how much of a secondary grass seems to show up when a dominant one gives ground, either seasonally, or because of unforeseen environmental changes. As a matter of fact I wonder whether even the experts can be sure of distinguishing one cultivar from another in a mixed turf; sometimes it is relatively simple, as with cultivars that green up differentially in early spring or exhibit differing morphology at a particular time. But when the whole population is growing lushly and being regularly mowed, I myself am seldom sure in making stand counts. It is often difficult to distinguish even between species (I remember trekking a golf course some years ago with one of the most eminent turfmen of the times, who could not say what species we were examining on a particular fairway!).

"It is not difficult to come up with compatible cultivars which give the illusion of a single-strain monoculture, but which carry a goodly degree of assurance against epidemic disease or other threats to performance."

Certainly, in compounding blends and mixtures, one looks for grasses that offer complementary features. Should a cultivar be sensitive to cold, drought, harsh mowing, or whatnot? It is well to have others present not so sensitive to that particular factor. VPI utilizes this approach in the mid-Atlantic region, even calling for at least ten percent common bluegrass to supplement the improved cultivars in case low maintenance should prevail. New Jersey (Rutgers) suggests for park-type turf 60-75% bluegrass (including at least two improved cultivars), 10-20% fine fescue, 10-20% "turf-type" perennial ryegrass. Indeed, there is some evidence that certain grasses may buoy others. Jacklin research has noted that Citation perennial ryegrass sometimes helps restrict disease on a bluegrass component. Dr. Meyer, at Turf-Seed, has noticed that having bluegrass with perennial ryegrass reduces incidence of red thread and fusarium! Of course all risk can't be avoided simply by planting a blend or a mixture, for inadvertent weather changes and other unpredictables are sure to make a mockery of the best laid plans

A BEAUTIFUL LIE.

A BEAUTIFUL RYE.

There's no doubt about it. REGAL is the new turf-type perennial ryegrass that combines color, vigor and density for an elegant turf.

REGAL's dark green, fine-textured leaves look beautiful alone, or blend well with other turf-type ryegrasses. It has excellent tillering characteristics, and during periods of transition with bermudagrass, helps to maintain a lush, green, uniform turf.

And REGAL cuts clean, for a beautiful lie on tees, greens, fairways and roughs. Without ragged edges, or grainy areas.

Try REGAL—bred for rapid germination, exceptional vigor, density and persistence. Good disease resistance, too.

If you'd like more information on REGAL, contact North American Plant Breeders. P.O. Box 2955. Mission, Kansas. 66205 8-5256

NAPB
NORTH AMERICAN PLANT BREEDERS

First in the science of seeds.™

Circle **110** on free information card

REGAL

the ryegrass that gives your course a beautiful edge.

(Murphy's law, — if anything can go wrong it will, — applies to turfgrass culture as well as to other endeavors).

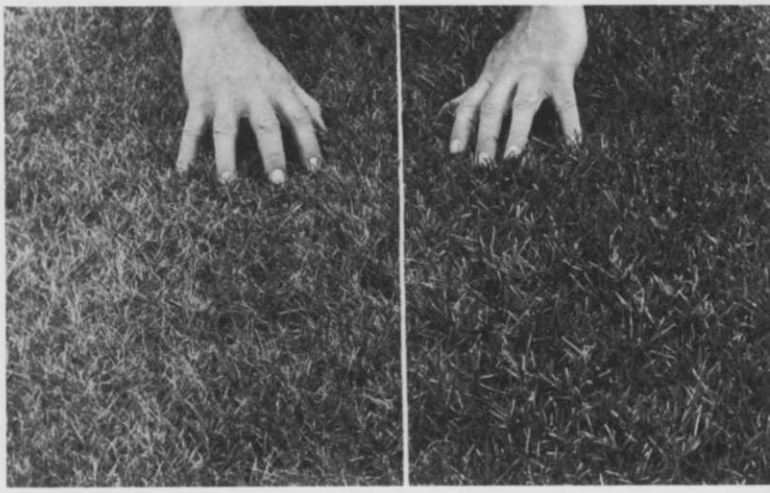
Each sod grower has to gain experience with seeding formulae suited to his operations. We have noted that a cultivar may be quite aggressive under certain conditions, but not under others. For example a Touchdown Kentucky bluegrass may withstand low mowing especially well, or a Nugget bluegrass make a superlative turf in northerly locations where dollarspot is at a minimum. Certain strengths can be found in any cultivar; after all, cultivars were bred for superiority of at least certain characteristics. Even if a cultivar is eventually dominated by others, it is not "wasted" in the seeding mixture. The game is "survival of the fittest", and what if fittest under one circumstance may be entirely different from that under another mode of care or in another location. Which of a series of similar cultivars is "carrying the ball" is of no great concern in establishing sod. Just so long as grasses of good pedigree are planted nothing unsightly will crop up, and the sod will perform strongly.

Some particulars

The differences between species in a mixture are, of course, more profound than those distinguishing cultivars. But, again, it is not always possible to predict which species will dominate. I remember a number of years ago at the University of Rhode Island, two identical seedings were made on opposite sides of a walkway, the only difference being that one side had the fertilizer raked in, the other not. In one case bluegrass dominated, in the other fine fescue! On the Lawn Institute grounds

"Under standardized lawn maintenance, perhaps the greatest advantage from blends comes in the initial years, after which the grass population will become dominated by one or another cultivar."

we have from time to time seeded bluegrass-fine fescue combinations, and for no very apparent reason end up sometimes with a predominately fescue population, other times with one almost entirely of bluegrass. Sowings of Fylking bluegrass, Manhattan ryegrass and Jamestown fescue were made across contiguous background seedings of Glade and Majestic bluegrasses. Both Glade and Majestic have remained low and very attractive by themselves (seasonally there are some differences), have blended well with Fylking, have somewhat dominated the fescue, but have been dominated by the ryegrass. Under other conditions I am sure that results could differ dramatically?



Turf on both sides of cord received exactly the same care. The grass on the right is a hybrid of the Nugget on left. Photo taken in late March in Oregon.

Dr. Blazer, of VPI, believes strongly in the influence of management. With a mixture containing ryegrass he advocates quick initial mowing to keep the ryegrass from shading slower, smaller bluegrass (he would also restrict the amount of ryegrass in the mixture). He believes that ryegrass grows at lower temperatures than other species, so mowing should begin early and continue late in the season to help offset ryegrass dominance. He notes how bluegrass profits from cooler temperatures, abundant nitrogen, and restrained watering, as compared to many summer "weeds" (he utilizes clover as his example, but the analogy would apply equally well to crabgrass and other hot weather species). He has enabled bluegrass to conquer quackgrass simply through regulation of mowing height. Engel, in New Jersey, notes that irrigation of bluegrass-fescue combinations tends to eliminate the fescue. In the benign coastal climate of Santa Ana, California, all combinations of bluegrass-perennial ryegrass had the same appearance after some months, no matter the proportions sown.

One doesn't have to be an ecologist to realize that height of mowing, timing of fertilization, irrigation regimen, soil pH, and so on, can all influence which species in a seeding mixture will gain dominance. The same seems true for cultivars. Penn State research (Sheffer, Watschke and Duich) has shown variable bluegrass cultivar response to changes in mowing height. Certainly Dr. Murray's (USDA) investigations indicate differential adaptability of bluegrasses to strong acidity. While it is unlikely any sod grower would fail to adjust pH to a favorable near-neutral stance, it might be reassuring with sod sold in acid-soil regions to know that cultivars such as Fylking, Glade, Plush and Ram I are present, — bluegrasses which are especially tolerant of acidity.

A pretty fair national dossier on the more prominent cultivars results from ratings in various regions. This affords a clue as to what to expect, even if not certainty. One impressive piece of direct evidence favoring blends over monocultures comes from the Rutgers "Blend-38" sowing,

Late winter photo shows disease damage to common bluegrass and resistance of improved Fylking.

in which thirty-eight bluegrasses were combined. This planting has consistently given above-average performance, and, more significantly, is one of the few cases where improvement continues with age. In another corner of the bluegrass belt, Dr. Portz, of Southern Illinois (Carbondale), similarly finds blends superior to individual cultivars in his region.

"Dr. Blazer of VPI advocates quick initial mowing of mixtures containing ryegrass to keep the ryegrass from shading the slower, smaller bluegrass."

Comparing ratings of combinations against the individual cultivars can be instructive. In general the combinations rate better, although occasionally the reverse is true. At Rutgers, using a 6-year average, combination blends of bluegrass rated slightly higher than all components individually. In one case Adelphi-Glade (6.8) was better than Adelphi (6.7) or Glade (6.3) alone. Nugget-Glade (6.6) was superior to Nugget (5.3) or Glade (6.3) alone. A different Nugget-Glade planting (6.8) was better than Nugget (5.3) or Glade (6.5) individually. Adelphi-Fylking (6.3) outscored Fylking (5.9) but not Adelphi (6.7), — Adelphi-Fylking-Merion (5.5) was much better than Merion alone (3.6), but including Merion lowered the Adelphi-Fylking standing. A Nugget-Park combination (3.7) didn't help Park (3.5) much, but did drag down Nugget (5.3). In Tennessee Merion-Baron, and Merion-Pennstar combinations were superior to any of the cultivars separately.

Fortunately, most cultivars are broadly tolerant and well adapted to a wide range of conditions. But rapid production of marketable sod, and good performance of that sod after sale, requires that its needs not be neglected. How turf is managed is still of monumental importance, no matter the cultivars planted. A well prepared soilbed, consistent irrigation after transplanting, fertilization, considerate mowing, and occasional help with pests, are not too much to ask of a turf custodian.

"Engel, in New Jersey, notes that irrigation of bluegrass-fescue combinations tends to eliminate the fescue."

Commercial considerations

It is apparent that the new proprietary turfgrasses offer considerable opportunities, not only for superior sod, but for promotional recognition. Advertising and publicity sponsored by proprietors elicit cognizance of top cultivar names. One has only to glance through the advertisements in magazines such as this to realize how far-reaching are these promotional efforts. Response is strong among leading horticulturists, who in turn influence others through articles, columns, and everyday leadership. Lawn service organizations, though seldom involved with planting lawngrass, are an increasingly potent force for spreading basic information and varietal acclaim.

Kentucky bluegrass remains backbone to the sod industry, except for the deep South where St. Augustine and other warm-weather species may be offered. No better sod-forming species than bluegrass can be had; its roots and rhizomes knit a sod of remarkable strength. Some cultivars yield sod of slightly greater shear strength than others, but changed conditions generally overshadow natural differences. Experience has clearly shown that a little bluegrass is sufficient to bind a great amount of bunchgrass or species which rhizome weakly (e.g. Chewings fescues, Michigan; tall fescues, Virginia-Maryland and southern Illinois). The length of time necessary to mature a sod will vary with the climate; it may take two growing-seasons in the Rocky Mountain states, but as little as a few months in California flatlands.

"In general, combinations rate better than individual cultivars in the same combination."

For the most part the sod industry seems to have resisted inclusion of perennial ryegrasses in sod, a bunchgrass not strongly sod-forming. But from the business standpoint perennial ryegrass would seem to have potentiality for speeding up sod maturation, since the species sprouts and grows so rapidly. Now that many sod growers are turning to woven nettings to hold sod together, so that it may be lifted and sold at an earlier stage of maturity,

Introducing the most economical sprinkler since rain.

Here's a head that can cut the cost of the whole system: heads, valves...and maybe even the controller.

That's asking a lot, but the new Rain Bird® Mini-PAW™ (Pop-A-Way®) sprinkler has a lot to offer—starting with a suggested retail price of just $14.69.

That's less than any comparable sprinkler on the market. Not bad considering that the Mini-PAW sprinkler has features that standard heads can't begin to match.

And because it delivers only 1.6 GPM (at pressures as low as 25 PSI), you'll probably need fewer circuits. Which, of course, will save you valves. And with fewer circuits, you may be able to spec a smaller, less expensive controller.

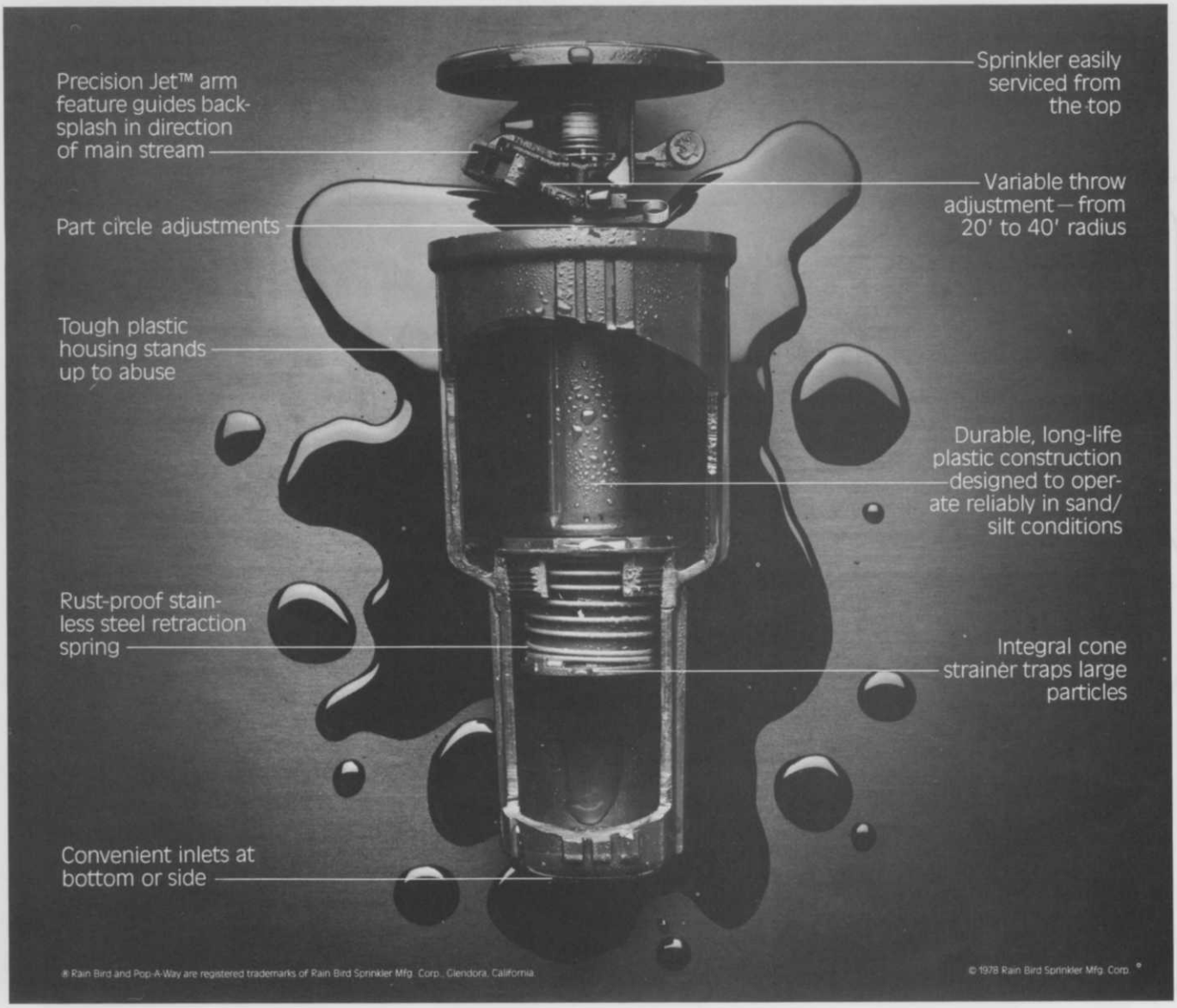
Consequently, your bid is going to be a lot leaner. And once the job is in, you'll be amazed at the reliability of the Mini-PAW sprinkler.

It's just one more way Rain Bird keeps you growing.

RAIN BIRD®

Bringing new ideas to life.

7045 N. Grand Avenue, Glendora, California 91740


Precision Jet™ arm feature guides back-splash in direction of main stream
Part circle adjustments
Tough plastic housing stands up to abuse
Rust-proof stain-less steel retraction spring
Convenient inlets at bottom or side
Sprinkler easily serviced from the top
Variable throw adjustment—from 20' to 40' radius
Durable, long-life plastic construction designed to oper-ate reliably in sand/silt conditions
Integral cone strainer traps large particles

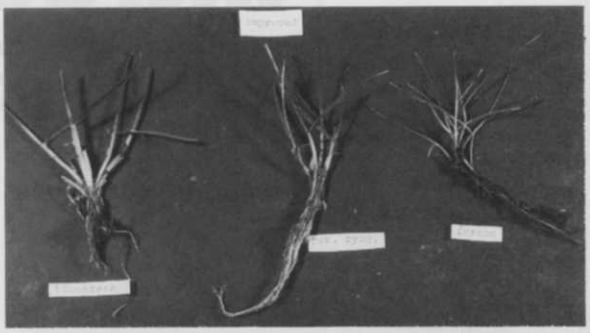
® Rain Bird and Pop-A-Way are registered trademarks of Rain Bird Sprinkler Mfg. Corp., Glendora, California

© 1978 Rain Bird Sprinkler Mfg. Corp.

we may see greater interest in such "turf-type" perennial ryegrasses as are listed in the table. These cultivars are just as attractive as is Kentucky bluegrass, and as was mentioned may be synergistic in preventing disease. In order to obtain adequate bluegrass representation, perennial ryegrass must be limited in the seeding mixture, and the stand managed to retrain it from overwhelming slower bluegrass. Seeding rates for sod generally

"Now that many sod growers are turning to woven netting to hold sod together, so that it may be lifted and sold at an earlier stage of maturity, we may see greater interest in turf type perennial ryegrasses."

run about 80 pounds to the acre. Higher rates could provide greater density more quickly, and especially with larger-seeded cultivars such as perennial ryegrass (with only a fifth as many seeds to the pound as most bluegrasses have) seeding



Improved bluegrasses for basic strength, perennial ryegrass for quick establishment, and fine fescue for infertile-shady spots.

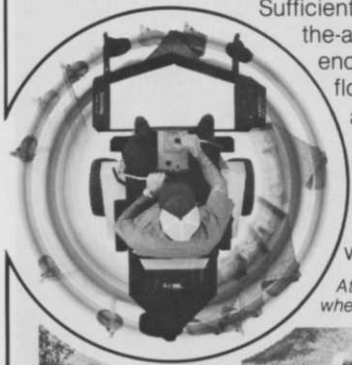
rates may require proportionate increase. No material difference in fertilization should be required with differing blends and mixtures, fertilization needs being tied more to soil conditions than to kind of grass or seeding rate.

All in all it does appear as though the sod industry has reached a vantage point from which it can benefit broadly by utilizing the new proprietary cultivars for blends and mixtures suited to various regions. Such sod should have enhanced sales appeal. Cultivars like those listed in the table would certainly seem worth considering.

Mowing Faster with a Grasshopper Cuts Lawn Maintenance Costs

Zero turning radius maneuverability of an out-front, full-view mowing deck moves mower operators on and off lawns in up to half the time spent with conventional equipment . . . a big labor savings at every mowing.

Sufficiently sized and rugged enough for mowing-by-the-acre, the Grasshopper is also responsive enough to finish trim around small trees, shrubs, flowers and in under playground equipment and fences.



Drive Wheel Hydrostatic Steering Can Instantly Forward One Wheel While The Other Reverses. Compare the potential maneuverability of forward/reverse-drive-wheel-steering with conventional single-wheel-pivot-steering and you begin to understand how Grasshopper units have consistently out-cut and out-finish-trimmed other mowers.

At completion of zero radius turn, the left and right drive wheels have exchanged positions.

Rugged, All Steel Construction combined with the reliability of a shaft-driven 44″, 52″ or 61″ mower deck assures daily-use dependability and consistent cutting performance.

Full Mower Deck Visability from a natural sitting position directly above the drive wheels contributes to precision mowing and comfort.

Grass Vacuum conveys clippings to catcher with fan assembly powered by mower deck drive —not an additional engine.

Snowthrower easily replaces mower deck for year 'round maintenance.

Call us now . . .

(316) 345-6304

GRASSHOPPER®

THE GRASSHOPPER COMPANY

P.O. Box 810 / Moundridge, Kansas 67107

Circle **138** on free information card

pure, purer, purest

THE BEST SEED SHOULD DO MORE THAN GROW GREEN GRASS

ADELPHI processing and blending equipment are inspected and certified "sanitary clean" prior to blending insuring the highest degree of purity. ADELPHI is completely free of noxious weeds.

ADELPHI Kentucky Bluegrass averaged best over 35 other leading bluegrasses for uniformity in turf growth and density, disease resistance, drought, heat and cold.

ADELPHI chosen by the Plant Variety Protection office in the U.S. Dept of Agriculture as the standard dark green color which all other bluegrasses applying for plant protection will be compared to.

For the purest seed, for a thicker, greener turf insist upon the best. ADELPHI

For information, contact:

J & L ADIKES, INC.
Jamaica, N.Y. 11423

JONATHAN GREEN & SONS
Farmingdale, N.J. 07727

NORTHRUP KING CO.
Minneapolis, Minn. 55413

VAUGHAN-JACKLIN CORP.
Bound Brook, N.J. 08805
Downers Grove, Ill. 60515
Post Falls, Idaho 83854

Canadian Inquiries: **ROTHWELL SEEDS LTD., Box 511, Lindsay Ont. K9V 4L9**
Other International Inquiries: **NORTHRUP KING CO., Minneapolis, Minn. 55413**

Adelphi

(U.S. Plant Patent NO. 3150)

THE GREENER KENTUCKY BLUEGRASS

HYDROGRASSING & POWER MULCHING EQUIPMENT

HG-15 Hydrograsser

Power, Precision, Performance. The HG-15 is ideal for applying fiber mulch, seed and fertilizer in one operation. Covers as much as three acres per load of granular solids in 12 to 20 minutes. Reinco's jet agitation system insures against clogging. Less down time for maintenance. HG-15... the profit producer.

M-80C Trailer Mounted Power Mulcher

Higher production. Lower maintenance. Heavy-duty M-80C handles a quarter of a million pounds of hay per day. Accurate distribution up to 95 feet. Equipped with straight through drive, M-80C has more power, needs less maintenance.

TM7-30(X) Trailer Mounted Power Mulcher

The TM7-30 (X) spreads 4 tons of hay per hour. Blows hay mulch up to 60 feet. TM7-30 (X) is also equipped with straight through drive. Discharge spout moves 360° horizontally, 60° vertically. Trailer mount permits on-site mobility, eliminates truck tie-up.

We Make It Easy

Reinco

Reinco

P.O. Box 584
Plainfield, New Jersey 07061
(201) 755-0921

Circle 171 on free information card

TABLE 1 — Examples of modern-day lawn cultivars that might be used for sod blends and mixtures. They are specially selected or bred for particular uses, tend to be lower-growing, more attractive, and less prone to disease than common lawngrass.

Bluegrass *(Poa pratensis)* — Easily cared-for, best sod grass; prefers good soil; modern cultivars tolerate most diseases.
Adelphi — dependable, with all-around merit
Arboretum — persistent low-maintenance "old-fashioned" selection
Baron — vigorous in early years, widely adapted and much used in mixtures
Birka — attractive, persistent under low maintenance
Bonnieblue — moderately competitive, high quality
Enmundi — rates well everywhere, seems compatible
Fylking — non-aggressive beauty in dependable supply
Glade — good general qualities, plus shade tolerance too
Majestic — especially decumbent, not too aggressive and blending well
Merion — long the standard; new hybrid in the offing
Nugget — very dense, endures shade, stronger northward
Plush — broad adaptability with heat and drought tolerance, gaining acclaim
Ram I — good persistence, excellent in blends
Sydsport — robust, vigorous, of good general quality
Touchdown — high-rating, unusually dense under low mowing

Fescues *(Festuca rubra,* in variety) — Great in shade, poor soil and low maintenance.
Banner — dense, multi-clone polycross from eastern USA Chewings bloodlines
Ensylva — spreading fescue, low-growing and well-adapted to mixtures; from Holland
Highlight — elegant beauty in a dense Chewings variety; bred in Holland
Koket — enjoys high ratings; a strong performing Chewings type from Holland
Ruby — a spreading variety, much used in bluegrass mixtures; from Holland

Perennial Ryegrass *(Lolium perenne)* — Fast-starting and aggressive, attractive cover quickly.
Blazer — one of the newer releases showing much promise
Citation — an excellent "turf type" polycross with muted aggressiveness
Derby — polycross with all the good features typical of modern releases
Diplomat — a complex polycross from Rutgers with excellent credentials
Fiesta — a promising release similar to Blazer
Manhattan — outstanding, hardy, pace-setter for "new breed"
NK-200 — unusual winter-hardiness adds to general attractiveness
Omega — classical elegance combines with good performance
Pennfine — an aggressive polycross from Penn State rating among the best
Regal — a fine new polycross in the image of Derby
Yorktown — an excellent all-purpose polycross of "aristocratic" mein

DERBY

Turf-Type Perennial Ryegrass

Setting a New Standard of Excellence

Derby is the dark green beauty which joined Manhattan and Pennfine on the "highly preferred list of ryegrasses." That was last year. Now Derby is setting a new standard of excellence.

In the eyes of many Golf Superintendents it reigns supreme among the turf-type ryegrasses today. Why? Because it performs! And a Superintendent knows that claims are great, but performance counts.

- Consistently performs better than other leading varieties from California to Florida
- Durable, dark green and has excellent mowing qualities
- Tolerates a variety of soils & responds rapidly to fertilization
- Germinates in a week (or even less) under ideal conditions
- Better-than-average heat and drought tolerance
- An adaptable and disease resistant cool-season turf grass
- An excellent record as a Southern winter grass
- Thrives when close-cut

INTERNATIONAL SEEDS, INC.

Dept. D • P.O. Box 168 • Halsey, Oregon 97348

(503) 369-2251 • TWX 510/590-0765

HOW TO PREPARE AND MAINTAIN A BASEBALL FIELD IN THE WEST

Most of the baseball turf that Dr. Kent Kurtz, Cal Poly in Pomona, Calif., sees is hybrid bermuda, some Kentucky bluegrass. "In this immediate area, the Tifgreen bermuda stands up to the close mowing better than the bluegrass because of the higher summer temperatures," he says. "I have seen some pretty decent bluegrass infields in some of the college stadiums."

Not too much baseball is played during the winter months, even in California, but most of the fields are overseeded with either annual or perennial ryegrass, Kentucky bluegrass or a mixture.

The Anaheim stadium is Tifgreen bermuda and the San Diego stadium is Tifway. The Dodger's stadium is Tifgreen, overseeded every winter with a Kentucky bluegrass, perennial ryegrass mixture. Going into the spring period, mowing heights are lowered and the Tifgreen takes over again.

Choosing the right grass is important, Dr. Kurtz stresses. "There are a couple of fields out here that have used tall fescue in the outfield, 100 percent, college fields, that is. Their whole point was to get a grass out there that would slow the ball down.

"There's not any reason why tall fescue could not be used as an outfield turf," he adds. "It's a grass that's really transition zone. You've got to seed it heavy, 12 pounds per thousand, to crowd the clumps close together. If you mow it at about one inch, you should have a pretty adequate field. Out here it'll stay green all year round.

"We've recommended it to some high schools, for the outfield, not the infield, because it doesn't go dormant and performs well under stress and drought and it is fairly wear tolerant.

"Dormant season for most bermudas here is late November through about mid-February. It depends on the area. In the desert, it'll be a little longer, maybe the last of October to the first part of March. Near Phoenix, it's October through March.

"At the University of Arizona, they overseed the infield with annual ryegrass. So does Arizona State. They play a lot of winter ball there. They overseed at rates of 8-12 pounds per thousand.

"Mowing heights are not necessarily higher after overseeding because it is done in the winter months when it is cool. There's no reason to go really high, maybe up to about an inch, or an inch and a quarter. There's not much stress, it's cool at night, and doesn't get much over 70 during the day.

"Bluegrass and perennial ryegrass more or less subside during the summer. They don't really die out, they just kind of subside and let the bermuda take over during the hot weather. It's a pretty good marriage. A lot of the bluegrass and ryegrass comes back in the fall.

"Drainage is a problem on baseball fields. Some fields are sloped from the pitchers mound to the edge of the infield and you get a puddle behind second base. On some major league fields that are covered during a rain, the water ends up being dumped behind the infield. That's generally the poorest drained area of the whole field. I would recommend tiling extensively, whether you're starting a new field or improving an old one."

Angel Stadium in Anaheim, Calif. The red crushed-brick basepaths provide contrast with the green field.

Soils

"We have soil types ranging from sandy loams to clays. Out here, what we do that they don't in the Midwest and East, is amend the soils with organic materials. It depends on the soil type, but if you have a heavy clay, for example, and are starting from scratch, we would recommend probably somewhere in the area of 6-9 cubic yards of a decomposed bark material, nitrified bark. Worked in with the soil mix itself, the bark will improve percolation and infiltration of the water.

"For the skinned areas, we're using crushed brick, a reddish material. It consists of 70 percent crushed brick (its a baked brick), 28 percent crushed vitrified clay, and 2 percent plaster sand. The sand is added to keep the consistency from tightening up after the material is put down. Otherwise it becomes too hard.

"The Angels in Anaheim Stadium use it. We've used it on our university infields and some of my former students are using it on their fields.

"Its about a four-inch layer of this crushed brick over a base, in many cases clay. The base happens to be decomposed granite material in the Anaheim stadium, but the manager isn't too happy with it. It just happened to be there.

"Starting from scratch, on the average major league infield, it would take about 150 tons. The stuff is running about $15.50 a ton plus shipping.

"The material is put down in three layers. The skinned area is ripped first, and then a layer of crushed brick is spread and worked in. Another layer is put down and worked in, and then another.

It takes a period of three days or so to finish the job. If you just dump it on the surface it will blow away.

"It requires about 25 tons a year for maintenance, after the initial applications. The material does work very easily. Prior to a game, the material is wetted lightly to keep dust down. Then it is very easy to drag and level off. The red color, from an aesthetic standpoint, provides a very nice contrast with the green turf.

"Over in Tucson, I've seen some basepaths primarily of sand materials, with a little soil. In other areas, they use a material referred to as "river bottom" soil.

Fertilizing

"Rates should be based on soil test, combined with visual observation. Many superintendents can look and say it either needs it or it doesn't. Hybrid bermuda will take up to 12 pounds of actual N per thousand per year. Whether it needs that much is another question. That would be the high side. On the low side, you're talking about six pounds.

"I generally tell people not to go over one pound of actual N per thousand per application. That's only if they're using soluble products, something like ammonium sulfate or nitrate. If they're

Continued on page 30

University of Arizona field has skinned areas of a sandy soil composition. Turf is common bermuda, overseeded with annual ryegrass for winter play.

ADVICE FOR EASTERN FIELD MANAGERS

Dr. Henry Indyk, Rutgers University, Cook College, New Brunswick, New Jersey, offers some advice for baseball field managers in that part of the country.

Dr. Indyk doesn't like a completely skinned ball field. He feels that play is better on turf, there is not a mud situation under wet conditions nor is there dust when the wind is blowing. However, he warns that a poorly maintained turf field can be worse than one completely skinned.

Initial construction specifications are very important. Proper grade needs to be established for water movement off the field, and a good drainage system for water to move through the soil.

He recommends using a 75-80 percent sand mixture in the infield for good water percolation. For the skinned areas, a 60 percent clay, 40 percent sand mixture will provide a firm surface for the players.

The skinned areas should be dragged with a light scarifying action to make the area smooth and to fill in uneven spots from play action. On a field with proper grade and contours, the water will move laterally, rather than ponding.

A good Kentucky bluegrass blend should be used. The density, quality and texture of the field is critical. A good height of cut for the infield is three-fourths to one inch during the season, with the outfield mowed a bit higher, perhaps.

The mowing height should be raised to one and one-half to two inches after the season to allow the turf to recover. Because the infield is mowed closer, it should be mowed frequently to avoid cutting any excessive length of leaf blade at any one mowing.

Fertilization practices should be similar to that of any well-maintained turf, but care should be taken not to get the turf too lush during the playing season. More wear and disease problems will result.

Dr. Indyk recommends a tall fescue mixture if the field endures a lot of use with low maintenance. A mixture of perhaps 75 percent K-31 tall fescue, with the remaining 25 percent split between Kentucky bluegrass and one of the perennial ryegrasses would provide a durable cover.

One of the big problems, Dr. Indyk feels, as far as general community fields, is that too often there are inadequate provisions for maintenance. A good field needs an organized, well planned, and well budgeted maintenance program.

CUSHMAN. MORE THAN TRANSPORTATION,

With the Cushman 3- or 4-wheel Turf-Truckster® vehicle, you get a lot more than proven, economical turf transportation. You get the heart of a system that lets you do eight important turf jobs with one versatile power unit.

1 PIN-DISCONNECT

The secret of this versatility is the Cushman Pin-Disconnect system. Just put the attachment you need on the Turf-Truckster chassis, secure it with the large pull pins and you're ready to go. No special tools, no trailer to tow, no equipment to load and unload at the site.

2 GREENSAVER® AERATOR

The efficient, low-cost way to quickly aerate greens, tees or other turf areas. The Greensaver drum aerator attaches easily to either Turf-Truckster equipped with hydraulic system and dump kit. Three interchangeable drums let you use 1/2" or 3/8" coring tines, as well as slicing tines. You change drums according to varying soil conditions. The coring drums collect cores as you aerate up to 10 times faster than walk-type units.

3 SPIKERS

The Cushman Quick Spiker attaches to a Turf-Truckster with PTO, hydraulic system and dump kit. You spike a precise 57-inch swath, even over undulating ground, and raise or lower the unit hydraulically. The Trailing Spiker gives you the same width and precise results, but its built-in lifting mechanism is controlled by a pull rope.

4 SHORT BOX & FLATBED/BOX

These hauling and dumping attachments are mounted quickly with two pull pins. Bolt-on sides and tailgate convert the flatbed to a dump box. Both boxes can be dumped easily with either a manual or powered hydraulic dumping package. And either box is capable of hauling up to 1,000 lb. payloads.*

5 SPRAYER

Use this versatile attachment to spray greens, hard-to-reach roughs, fairways, trees, bushes. The polyethylene tank holds up to 100 gallons of chemical solution. The three-way boom provides an accurate spray for proper application and less chemical waste. The Turf-Truckster transmission and variable speed governor assure uniform ground speed. And the optional handgun lets you "fog" an area or spray up to 40' in the air.

*Rating for vehicle equipped with 9.50-8 rear tires.

WE GIVE YOU A TOTAL TURF-CARE SYSTEM.

6 SPREADER/SEEDER

The Cushman Cyclone Spreader/Seeder mounts on either the Short Box or the Flatbed/Box with a hopper that holds up to 300 pounds. All controls can be operated from the driver's seat, to broadcast over areas up to 40 feet wide, depending on materials.

7 TOP DRESSER

The Cushman Top Dresser eliminates the need for self-powered units and time-consuming walking. The moving bed and rotating brush operate at a controlled speed to maintain an even spreading pattern over a 31-1/2 inch swath. The big hopper can hold up to 1,000 pounds of material, from rock salt to fine, powdered materials.

8 QUICK AERATOR

The Cushman Quick Aerator is designed to slice greens and aerate fast. It attaches to either Turf-Truckster with just three pull pins. And is hydraulically lifted from the driver's seat for easy movement from green to green. Three tine types are available for varying soil conditions: slicing, coring (two sizes) and open spoon.

CUSHMAN RUNABOUT

The economical answer to basic transportation and light hauling requirements. The new 18-hp Runabout now carries two men, plus equipment and supplies, while the 12-hp model carries one man. Both feature a big pick-up box, exceptional maneuverability, and 3-speed transmission. The Cushman Runabout is the way to help your men do more work, and less walking.

Ask your Cushman Turf Dealer to show you all the time- and money-saving advantages of his turf-care equipment. Unlike other companies, Cushman gives you more than transportation. We give you a total turf-care system.

Circle **103** on free information card

CUSHMAN®
Turf Care Equipment

OMC-Lincoln
A Division of Outboard Marine Corporation
P.O. Box 82409, 3341 Cushman
Lincoln, Nebraska 68501

Left, Bon View, Calif. little league field before Dr. Kent Kurtz and students began rennovation in February, 1978. Below, a student redefines the skinned areas with a sod cutter.

Left, Dr. Kurtz, Cal Poly Professor, inspects the job being done by his students. Below, students prepare the skinned areas for crushed brick.

using something like slow release IBDU, there's no reason they can't go up to four pounds per thousand of actual N without burning the turf.

"We tried it on both bluegrass and bermuda and found if we went four pounds, whether it was IBDU or ureaformaldehyde (UF), probably three applications per year, at four pounds would be best. Maybe applications in March, July and November, three applications well spaced throughout the year.

"The problem with slow release products is that when you run into cooler fall weather, you're not going to get much release, because the microorganisms are not as active. Even though they say the products don't require soil temperature, as far as we're concerned, they do.

"Two applications of a low release product, say in March and July, followed in the fall with a couple of applications of soluble products, would provide a better response. We use a soluble carrier in the winter here, basically because it is readily available."

Irrigation

"Water availability hasn't been a problem for the last two years. We have more now then we know what to do with.

"A lot of our sports fields are going to the tensiometer method. The tensiometer is hooked into the automatic watering system and the turf is irrigated on the basis of the soil's wetness, or dryness.

"Almost all of the fields are on automatic watering systems. Pretty much Toro and Rainbird. Both companies are local here.

"There's a lot of problems with irrigation, though. You set your time clocks, but that doesn't mean that you can forget it. Irrigation needs a lot of coordination, between both players, coaches and the entity that owns or operates the field.

"Sometimes, with soils like the heavy clays, on the automatic system, you can repeat cycles. Put a little bit on, come back in an hour or two, put a little bit more on and then a few more hours come back with another shot. The clay will absorb moisture slowly, but it will take it in. Otherwise, water runs off and doesn't do much good."

Aerification

"I would say that this is a very important aspect of baseball fields, because you don't want them to become too hard. They are subject to compaction.

"The turf areas of the field should be aerified at least twice a year, maybe four times a year for the infield. The plugs can be dragged in, if its a sandy type of soil, and the debris is picked up. If it is a poor soil, remove the plugs and then topdress with a material that's porous and will get into the aerification holes and keep the field open for drainage. It's particularly important in the infield.

"You want to keep the field as level, smooth and uniform as possible. The major leagues have got to do this, they're dealing with a lot of money.

If they have a concert or something in the Angel's Stadium, they meticulously comb the field five or six times, looking for glass, can pop-tops, anything that would jeopardize a million dollar player. They just cannot afford to have an accident through carelessness."

Continued on page 32

For ad on following page circle **114** on free information card

CIL Sulphur Coated Urea

The Number One Controlled Release Nitrogen Fertilizer

CIL Sulphur Coated Urea is being tested against other controlled release nitrogen fertilizers at 14 different universities in the U.S. and Canada. Photo above shows one of the test sites with CIL Sulphur Coated Urea treated grass in foreground.

Efficient Effective Economical

Efficient

- Release of nitrogen is controlled by moisture. Temperature and bacterial activity are not important factors. Excess moisture however, **does not** markedly speed up the release of the nitrogen.
- Soil ph does not alter pattern of release.

Background photo:
CIL Sulphur Coated Urea prills actual size.

Effective

- Tested on grass plots under scientifically controlled conditions, CIL Sulphur Coated Urea outperformed all conventional slow release nitrogen fertilizers tested, in both the appearance and growth of grass obtained.
- CIL Sulphur Coated Urea releases nutrients as soon as it is applied and continues to do so evenly over 4 to 5 months. Result is more complete utilization of nitrogen applied, and no build up of nitrates in the soil.

Economical

- Low cost per unit of controlled release nitrogen.
- Available in bulk **or** in 55 lb plastic bags.

Please send me more information about **CIL Sulphur Coated Urea.** ☐
Please advise who can supply me with blended products made with **CIL Sulphur Coated Urea.** ☐

Name..... Company.....

Street.....

City.....

State.....

Zip.....

Mail to:
Peter Buckley
Professional Turf Products
Canadian Industries Limited
P.O. Box 5201, London, Ontario, Canada
N6A 4L6 Telephone: (519) 672-9220

A dependable source of supply of quality products, in commercial quantities, from Canada's largest chemical company

C·I·L

Canadian Industries Limited

Broadleaf weeds are sprayed (above) and the outfield is fertilized (below) using City of Ontario equipment.

Weed control

"Weed control is one area that I feel a lot of managers are missing, particularly in the hybrid bermudas. We get a lot of annual grasses, crabgrass, annual bluegrass, and some of the perennial grasses like dallisgrass.

"I think the thing that they are missing is not timing application of preemergence material properly, at least as far as Poa annua and crabgrass. In this area, we put on a preemergence herbicide about now, early to mid-January. The farther up the coast you go, the later it is. In San Francisco, we're talking about March.

"We can use Kerb to clean up annual bluegrass and crabgrass on a postemergence basis. Of course, you can't use it on any other type of grass, but it really cleans up the bermuda.

For broadleaf weeds, a good broad spectrum product like Trimec or Tresan, with 2,4-D, dicamba and MCPP works good. Once or twice a year, you can go in and really clean up the broadleaves. There's no fiddling around with first one chemical, then the other.

"I think most people don't realize though, that if a weed is not actively growing, then the thing isn't going to die."

Verticle mowing

"Verticutting, particularly on hybrid bermudas should be done at least once a year. Late fall, to early winter is the best time, prior to any application of preemergence materials. Once the preemergence herbicide barrier in the soil is broken, the field is vulnerable to crabgrass.

Lines

"I heard from one of my student former students who is now managing a college field, that the NCAA prohibits the use of lime as a lining material. He had to switch to another powdery material.

"Using lime, especially on fields that are heavily used, seems to be a problem, because the material has to be reapplied all the time. They used to burn the lines with weed oil and then put the lime in the pocket that resulted. Weed oil is kind of greasy if someone slides into it and could be caustic, if someone had an open wound. Lime is also caustic.

"Some fields are actually painting on their white lines, either with a white latex paint, or they're taking hydrated lime mixed with water and spraying it on.

"Another former student of mine is using a sprayer that takes aerosol cans. He likes it. Says it costs more but is a lot easier to control. There's no mixing and its quicker.

Problems

"Most school systems' grounds personnel are not really trained. The people have just been around a long time and sort of inherit the job.

"We have quite an educational program with our conferences and so forth. I chair the sports turf section every year and we try to keep the managers up to date.

"I would say the local high schools and parks leave the most to be desired. The city we live in, I don't think the park fields have received an application of fertilizer in the last eight or nine years.

"I took my students over to a little league field here and rennovated the entire field. The city said fine, we'll give you the equipment and you do the job, so we did. We brought brick dust in, and we brought in fertilizer and sod, and redid the whole thing.

"Normally though, with Proposition 13 passing, things are even going to be worse. There's not going to be much maintenance done. Or if it is, its going to be skimpy." **WTT**

The Bon View little league field in April, 1978, ready for play.

WE WROTE THE BOOK

When it comes to landscape irrigation, we wrote the book! Weather-matic systems are used around the world to provide a cost-effective way to water residential grounds, parks, green belts, athletic fields, golf courses, highway medians and other landscaped areas requiring irrigation.

Tough, dependable, field proven Weather-matic products are installed and serviced by a worldwide network of local Weather-matic distributors and dealers.

For the name of your nearest Weather-matic distributor or dealer; to order our book (the Turf Irrigation Manual); or to get information on Weather-matic systems, call us in Dallas: (214) 278-6131. Weather-matic Division Telsco Industries; Box 18205 Dallas, Texas 75218

The finest lawn and turf irrigation system for any landscaped area

Weather-matic.

Circle **132** on free information card

"I could sure use a rugged mid-sized rotary that really maneuvers."
JACOBSEN
JACOBSEN

A lot of our customers have been wanting a mid-sized mower that's built tough to take it, and that's highly maneuverable at the same time.

So our engineers came up with the amazing Turfcat.

It's amazing because it's absolutely packed with features that help you get your medium-sized mowing jobs done faster and better than ever.

First, you have a choice of a 50" or 60" deck. (They're interchangeable.) Fully articulated, they closely follow ground contours so you get a smooth, even cut with practically no scalping.

Deck design lets you trim close, and also gives super clipping dispersion. The deck raises and lowers hydraulically for curb climbing and transport. And you can adjust cutting height from 1" to 4".

Then, the three-wheel, wide track design gives the Turfcat great stability on slopes. And the foot-operated hydrostatic drive lets you steer and maneuver while changing speeds or going from forward to reverse.

How about hill climbing? It's a breeze with the power delivered by the husky 18-HP Kohler overhead valve engine. And you can expect a long engine life filled with good fuel economy.

Plus, the Turfcat is quiet. All controls are within easy reach. And it might very well be the most comfortable riding rotary in the world.

Ask your Jacobsen distributor for a Turfcat demonstration. And have him explain about the many fine features that customers want.

The more you listen to what he has to say, the more you'll know we've been listening.

We hear you.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

NONSELECTIVE WEED CONTROL IS NOT JUST FOR SPECIALISTS

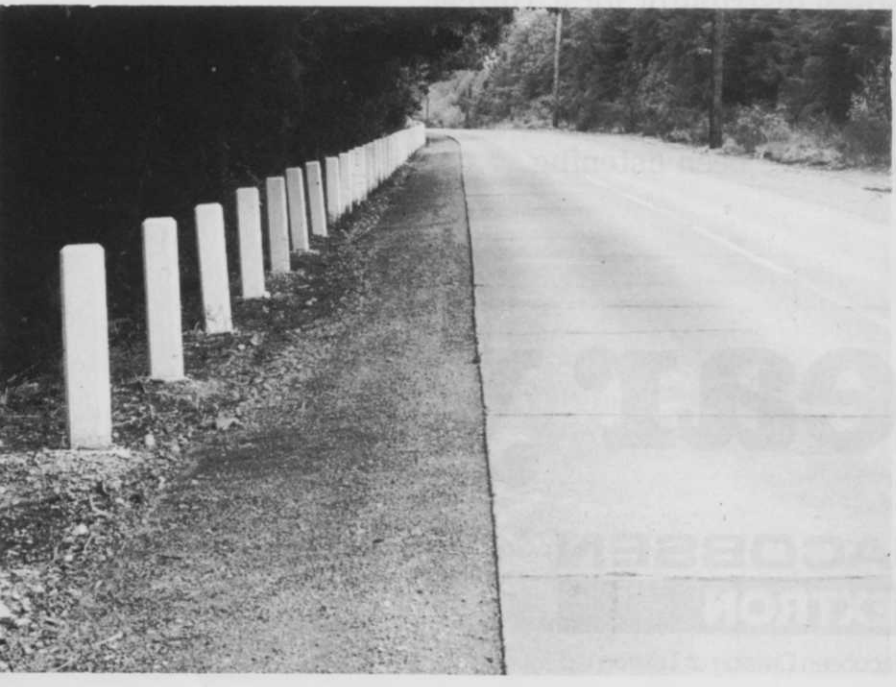
Just three of many uses of nonselective weed control in Green Industry occupations.

The task of eliminating all or most vegetation in a particular area is part of every Green Industry occupation. Whether the vegetation to be controlled is on a golf course, along a highway, underneath utility lines, a path through a park, drainage ditch banks, or beside cemetery markers, the job is similar.

Consequently, every Green Industry manager should have a basic knowledge of herbicides available for total control. This knowledge should include characteristics of the herbicides, precautions for guarding desirable vegetation and water supply, and plant factors which allow them to be controlled. Such knowledge helps assure efficient and safe control of unwanted vegetation.

Herbicides are designed to fill in where mechanical control is difficult or uneconomical. Although chemical weed control is not new, most advances have taken place since 1945 when the selective characteristics of 2,4-D attracted considerable attention from chemical manufacturers. As a result, the number of primary herbicides increased more than ten fold between 1950 and 1970.

Such growth in the herbicide and insecticide markets caused unease with environmental groups. The result was a vague law which has slowed product development for most of this decade. However, there are indications of growth in the total kill herbicide area recently. New combinations of existing products and new registrations for agricultural products are providing a larger selection. New products like Roundup (glyphosate) are restoring reliance on chemicals for vegetation clearance.



THE SPYDER

DO YOU PALLETIZE YOUR PRODUCTS - SOD, FERTILIZER, SEED, GARDEN PRODUCTS?
DO YOU DELIVER YOUR PALLETIZED PRODUCTS?
THEN YOU SHOULD KNOW ABOUT THE SPYDER MATERIAL HANDLER!

A LIGHTWEIGHT HEAVYWEIGHT

The Spyder's welded tubular steel frame is designed for maximum strength with minimum weight. It's load carrying capacity is 3500 pounds, the capacity of most standard forklifts, but the Spyder weighs only about 2700 pounds.

THIS LIGHTWEIGHT CREATES MANY BENEFITS.

EASY PORTABILITY

Traditionally, job site unloading has been performed by truck mounted cranes, towable or trailer transported forklifts, and even by hand, with each method having its own particular advantages and disadvantages. The Spyder, we believe, combines advantages of each method to provide you with a totally new concept in job site unloading.

In less than a minute the Spyder loads itself at the rear of your truck or semi-trailer bed without loss of valuable cargo space, and is transported with no road contact. Just like a truck mounted crane, but not like a towable forklift. When you arrive at the job site the Spyder unloads itself, then unloads the load. Pallets can be placed away from the truck at whatever distance necessary, like with any forklift, but not like a truck mounted crane.

We also provide a custom-designed lightweight trailer for convenient towing behind a car or truck if this method better meets your requirements.

THE BENEFITS DON'T END HERE.

MINIMAL MAINTENANCE

The Spyder is totally hydraulic. A 23 HP, two cylinder, air cooled Kohler engine is belt connected to two variable displacement hydrostatic transmission pumps and one fixed displacement gear pump. These pumps provide oil to three hydraulic motors and three sets of hydraulic cylinders. Any of these components, including the engine, can be replaced on the Spyder in about an hour. Each machine comes with a parts manual which lists not only our part number, but the manufacturer's name and their part number also. All parts on the Spyder can be shipped air freight from the factory, if you cannot obtain it locally. The idea is to minimize downtime.

WE LISTEN TO OUR CUSTOMERS

CUSTOMER ORIENTED IMPROVEMENTS

Recent improvements include a quick tension release on the belt drive. Just pull a lever while sitting on the operator's seat and all tension is taken off the belt drive for easy engine starting or belt removal. A newly designed drive wheel hub moves the center of the drive wheel directly over a large roller bearing for increased load carrying capacity and greater resistance to shock loads.

THE BEST IS YET TO COME

CREDIBLE COSTS

There are many costs involved with owning and operating any piece of equipment. At times your initial investment cost may be high, but low maintenance and operational costs offset this. At other times it's just the opposite.

The Spyder, compared to other job site unloading equipment,offers a rare combination of relatively low initial cost, low operating costs, and low maintenance costs.

NOW IT'S UP TO YOU

PROFIT POTENTIAL

When you consider all the information written here about the Spyder, and then consider how practical it would be in your own application whether it be unloading sod, fertilizer, seed etc., be sure to go one step further. Contact me by mail or phone and let me send you a brochure or answer questions you might have regarding your particular application.

We have sold over 500 Spyders across the U.S., Canada, England and Trinidad. We are establishing dealers and outlets throughout the U. S. and Canada. Two new manufacturing facilities are currently in the advanced planning stages. One in England and the other in Texas. THE REASON? THE SPYDER IS HERE TO STAY!!!

If you have delivery problems, let us show you how the Spyder can solve them.

For more information on the Spyder call or write: Mike Whitt - Sales Manager
Foxcroft Development Associates
5402 Edgewood Rd.
Crystal Lake, IL 60014
815-459-3351

Circle **118** on free information card

SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER SPYDER

Nonselective weed control

Selectivity and plant susceptibility

Most total kill herbicides are selective at lower rates. The more susceptible a plant is to a herbicide, a lower rate of herbicide is needed to kill it. Certain factors cause some plants to be more susceptible than others. A few are:

—faster growing plants and plants in growing phases (young) are more susceptible to herbicides.

—shallow-rooted plants are easier to control (no deeper than two inches).

—how easily a plant adsorbs a herbicide.

—exposure of growing points to herbicides. According to Klingman and Ashton in their book "Weed Science", the growing points of most broadleaf plants are located at the tips of shoots and at leaf axils, whereas the growing points of grasses are located below ground and at the base of the plant.

—the sensitivity of a plant's chemistry to the particular herbicide.

Application precautions

Residual herbicides have half lives many months long. This quality is desirable in reducing the number of applications for weed control, however it also increases the persistence of these toxic substances in water sources. Application near wells, lakes and streams should be done with caution. The label will specifically list ditch banks if the herbicide can be used near water. Some brush and weed killers are also used for aquatic weed control, such as Diquat.

Drift can cause problems with herbicide sprays. Droplet size, wind conditions, and direction of spray must be watched carefully. Granular applications should also be made carefully to keep the herbicide away from desirable vegetation.

It is absolutely essential that the label be read thoroughly and its directions followed exactly. A herbicide must be respected, not feared.

Herbicides available

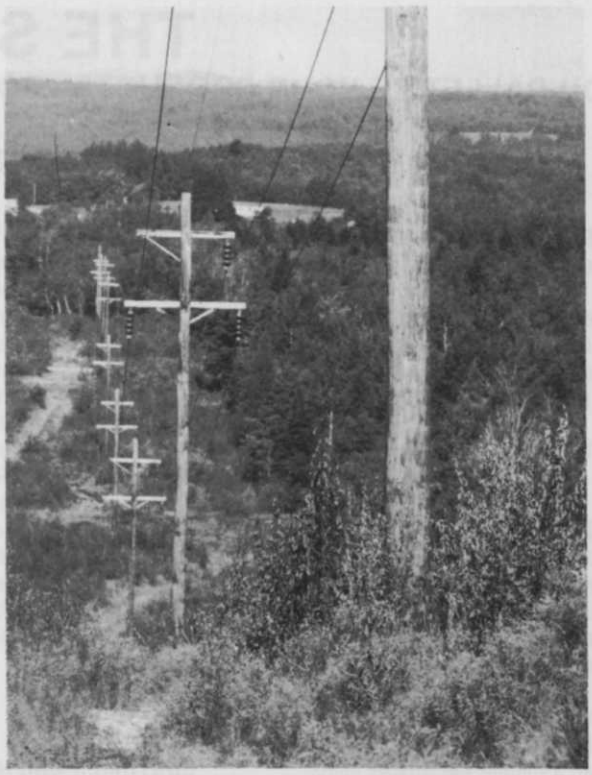
Many total kill herbicides are combinations of contact and soil products. The basic types of applications are:

—foliage spray
—soil treatment
—stump treatment
—bark treatment
—trunk injection

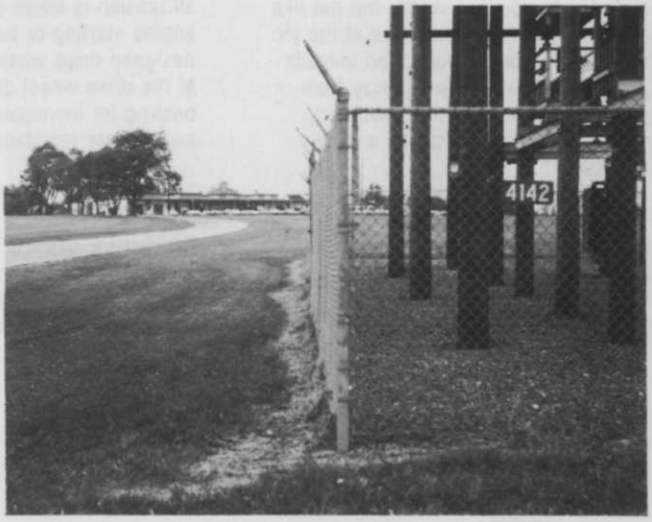
Foliage and soil application are the two primary types concerning Green Industry managers.

Herbicides have been designed to act quickly, slowly (over the winter), for long periods of time or for less than three days. Manufacturers also offer combinations of herbicides which provide quick kill and long term results.

All residual qualities are based upon persistence and continued toxicity of a herbicide in the soil. They may be affected by the amount of rainfall after application, the amount of clay and organic matter in the soil, and temperature. Most manufacturers have improved herbicide formulations to reduce leaching to a minimum.



Utility line clearance is the biggest use of industrial brush herbicides. Substations require bare ground treatment where mechanical control is impractical at current labor costs.



Addition of surfactants to contact sprays may improve their effectiveness. Oil (No. 2 diesel) can be used with some herbicides to improve sticking and penetration through tree bark.

Most herbicides are in the form of wettable powders, emulsifiable concentrates, solutions and granules. Granules are designed for soil application, although some granular products can be mixed with water. Water is by far the most common carrier of herbicides.

Application rates are based upon pounds per acre, or in some cases per 100 sq. ft. (an acre is 43,560 sq. ft.). Liquid applications are usually made with 40 to 100 gallons of water per acre. Aerial spray mixtures contain less water. Mixing instructions are on each label. Wettable powders and

Vegetation Problems?

Spike®

Try Spike granular also

is the tough one!

Spike lasts longer than most other herbicides with fewer pounds per acre!

When applied in accordance with label directions, commercial field use has demonstrated that Spike remains effective longer than other products tested, preventing regrowth and permitting lower application rates in succeeding years.

Spike resists lateral movement!

Spike is non-volatile, control stays where it is needed instead of "shifting" into unwanted areas, enabling specific placement.

Spike gets many vines, brambles and woody plants!

More than 5 years of development, testing and commercial use have proven Spike's effectiveness against a wide spectrum of vegetation, especially the tough perennials, tenacious vines and so-called hard-to-control species, like mullein, pigweed, curley dock and kochia.

Spike gets many of the brush species the others leave behind!

The most persistent vegetation control problem is **brush.** Spike helps solve that problem almost any time of year.

Spike provides versatility and easy application!

Commercial use has demonstrated equal effectiveness for both of Spike's principal product forms... wettable powder for spray application, or granular for mechanical application.

Wherever weed and brush control is the problem... in storage yards, parking areas, tank yards, around buildings and warehouses, along road shoulders and railroad spurs... the ideal remedy is SPIKE. It **does** what it **promises**!

Order Spike from your Elanco Distributor today. Spike should be the **foundation** of your vegetation control program.

ELANCO

Circle 113 on free information card

SPIKE is a registered trademark for Elanco Products Tebuthiuron

Elanco Products Company, A Division of Eli Lilly and Company, Dept. E-455, Indianapolis, Indiana 46206 U.S.A.

You may retire before our mower does.

That's the way we build the Ryan Commercial Mower: to last.

We use a rugged, 2-cycle engine with electronic ignition and a quick-response governor that keeps the power coming even in tall or thick grass. (Because it's a 2-cycle, you get constant engine lubrication without the danger of oil starvation when mowing on slopes.)

We put that engine on a 12-gauge steel housing and surround it with a tubular steel frame, to protect it while mowing under shrubs or bushes.

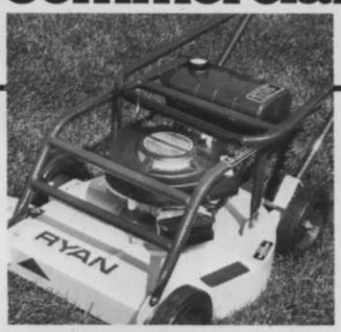
We give it Ryan's modular parts replacement system. So if a breakdown does occur, you can have the Commercial Mower back on your course quickly.

But we also make it easy to use. With a 1.25-gallon fuel tank for longer running, five adjustable cutting heights, a two-speed throttle and fold-down handle for storage or transportation.

Together, these features make the Commercial Mower the right tool for professional turf maintenance. Ask your Ryan dealer today about the Ryan Commercial Mower. The one machine that may outlast even the most dependable worker on your course: you.

Commercial Mower.

Easy to use, built to last.



RYAN®
TURF-CARE EQUIPMENT

OMC-Lincoln, a Division of Outboard Marine Corporation
6691 Cushman
P.O. Box 82409
Lincoln, NE 68501

79-CUR-1

Circle **115** on free information card

Nonselective weed control

emulsifiable concentrates may require continuous agitation for even herbicide distribution.

Following is a list of products available for total control and brush control along with the suggested retail price, application rate, and residual period.

Amchem Products Inc., Brookside Ave., Ambler, PA 19002

Amitrole T
Liquid contact spray of 2 lb. of amitrole per gal. Apply at 1-10 gal. per acre (depending upon plant species) mixed in 50-100 gal. water. Recommended especially for deep-rooted plants such as poison ivy. Price $16.20 per gal. for 1 gal. can or $15.45 for 5 gal. can.

Amizine (wettable powder)
Combination of amitrole and simazine for season-long control. Mix 20 lbs. in 100 gal. water for one acre spray. Very little leaching. Can be used near larger shrubs and on ditch banks. Price $4.77 per lb. in 5 lb. can and $4.55 per lb. in 50 lb. drum.

Amizine (liquid)
Same as Amizine w.p. but liquid applied at 8 gal. per acre in 40 gal. water. Price $11.61 per gal. in 1 gal. can and $10.88 per gal. in 5 gal. can.

Fenamine
Liquid formulation of amitrole, fenac and atrazine with both contact and soil action. Single application per season. Rate is 4 gal. per acre in 100 gal. water. Major uses include ditch banks and under paving. Price $18.00 per gal. in 1 gal. can and $17.30 per gal. in 5 gal. can.

Fenavar (granular)
Soil residual herbicide containing fenac and bromacil. Apply at 75 to 150 lbs. per acre. Price is $49.25 for 25 lb. drum.

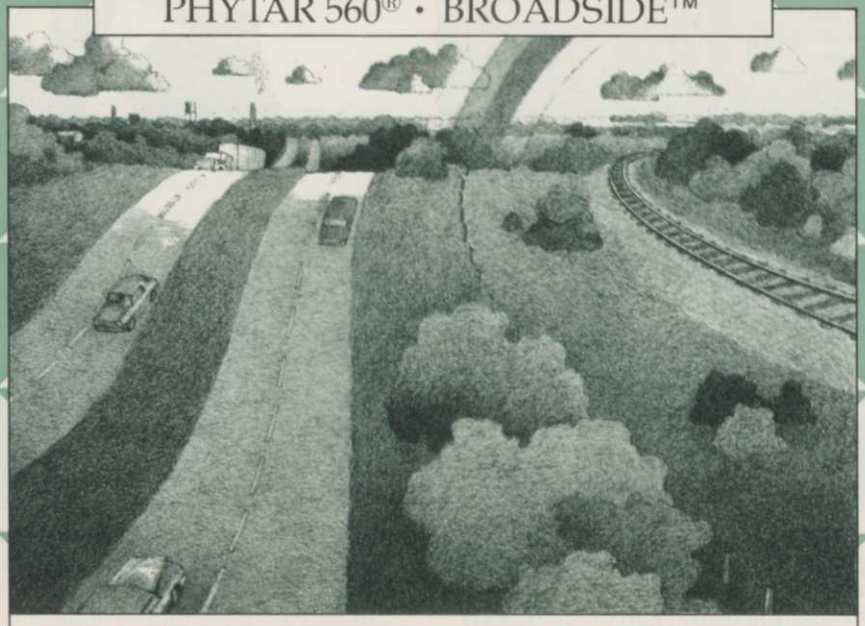
Fenavar (liquid)
Contact and residual liquid containing fenac, bromacil and amitrole. Application rate is 5 to 10 gal. per acre in 50 to 100 gal. water. Price $17.15 for 1 gal. can and $16.30 per gal. for 5 gal. jug.

Weedone IBK
Liquid containing 2,4,5-T and 2,4-D for brush control. Apply 1 to 4 gal. per acre in 40 to 100 gal. water. Check state regulations for use of 2,4,5-T. Price ranges from $18.98 per gal. for 1 gal. can to $17.76 for 55 gal. drum.

Weedone 170
Replaces Weedone IBK where 2,4,5-T use illegal. Contains 2,4-D and 2,4-DP. Applied at same rates as Weedone IBK. Contact herbicide for use on ditch banks, utility rights-of-way and highways. Price ranges from $17.83 for 1 gal. can to $16.61 for 55 gal. drum.

CRYSTAL

PHYTAR 560® • BROADSIDE™



GENERAL NON-SELECTIVE HERBICIDES

For general post-emergent weed control in non-crop areas Crystal Chemical Company makes Phytar 560 and Broadside. Both are Cacodylic Acid type herbicides, and Broadside also contains MSMA. Both products can be used for fast knockdown of weeds along highways, rights-of-way, around buildings, fence rows, playgrounds, drainage ditches, golf courses, and railways. Phytar 560 is safe for use around ornamentals and non-bearing citrus orchards, while Broadside's effective root-kill is ideal for controlling tough perennials. Both provide complete weed control without soil sterility. So don't let unsightly and hazardous weeds control you. Control them with Phytar 560 or Broadside.

Crystal Chemical Company
1525 North Post Oak Road
Houston, Texas 77055
(713) 682-1221

JOB MATCHED POWER

Ford rear blades for grading, leveling, ditching, back-filling, snow clearing, other jobs. Eleven models, 6 to 10-foot widths. Swing offset feature, standard on selected models, lets operator offset the blade right or left quickly and easily.

Tough Ford backhoes provide all the power you need for craning and digging. Sizes include 12-foot, 14-foot, 15-foot, 17-foot, and 15-foot with 4-foot hydraulic extendible dipperstick. Factory-installed 2-lever or 4-lever controls available on all but the 17-foot backhoe (4-lever only).

Ford 3-point hitch and hydraulics with twin lever controls. It's the Ford design for fast, precise landscaping. Response is smooth and accurate with fine increments of adjustment. Permits three types of response: 1) Blend of draft and position control. 2) Draft control. 3) Position control. Available on selected models.

Ford LCG (low center-of-gravity) tractors. Ideal mowing and towing power. LCG design hugs the slopes, while optional dual rear or low-pressure, wide-base tires pamper turf. Shown with Ford flail mower. (Photographed at Pebble Beach, CA.)

Ford tractors and equipment are available in a wide variety of combinations to match your job needs. Ford tractor power includes Ford industrial tractors, Ford all-purpose tractors, Ford LCG (low center-of-gravity) tractors. Most are available with options to match your special requirements. Here are a few of the many landscaping and grounds maintenance jobs that Ford tractors and equipment can do for you.

See your Ford tractor dealer today. He's listed in the Yellow Pages under "Contractors' Equipment & Supplies" and/or "Tractor Dealers".

FORD TRACTORS

Ford rotary cutters. Level medium to coarse growths in a fast, once-over operation. 60-inch, 72-inch, 84-inch, 100-inch and new 120-inch and 144-inch Ford rotary cutters. Gauge wheels standard. Options include straight, suction or hook blades, skid shoes, chain guards, etc.

Ford industrial tractor loaders. Backfill, load, lift, carry, spread or dump materials. Bucket capacities up to 1½-cubic yards. Optional or standard Ford tractor features such as power steering . . . differential lock . . . foot accelerator . . . power-reversing transmission to ease operations.

New 42-inch narrow Ford skid-steer loader. Here's 800-lb lift capacity in a rugged machine designed for small-space maneuverability. The new 25-hp Ford CL-20 is the smallest of three Ford skid-steer loaders. Each offers 4-wheel-drive traction, smooth acceleration, easy spin-turns.

FORD TRACTOR OPERATIONS
Advertising Department CL2P
2500 East Maple Road
Troy, Michigan 48084

Please send me information on the following Ford equipment:

- ☐ Ford rear blades
- ☐ Ford backhoes
- ☐ Ford low center of gravity (LCG) tractors
- ☐ Ford rotary cutters
- ☐ Ford hydraulics for precision landscaping
- ☐ Ford industrial tractor loaders
- ☐ Ford skid-steer loaders

Name_____

Company_____

Street_____

City_____ State_____ Zip_____

Like more information? Mail this coupon. We'll send you descriptive sales literature on the equipment that interests you.

Circle **104** on free information card

Nonselective weed control

American Cyanamid, Box 400, Princeton, NJ 08540

Cytrol
Combination of amitrole and ammonium thiocyanate. Liquid is applied at 2 to 4 gal. per acre mixed in 30 to 60 gal. water. Apply during active growth to annual and perennial weeds and grass. Contact action only. Keep away from water and livestock. Price based upon distributor.

Weed Killer 90
Same as Cytrol but in wettable powder formulation. Apply 2 to 4 lbs. per acre in 30 to 60 gal. water.

Ciba Geigy, P.O. Box 11422, Greensboro, NC 27409

Princep 80 W
Wettable powder containing simazine. Long term control through root adsorption. Often used to control weeds under pavement. Rate is 20 to 50 lbs. per acre in an equal number of gallons. Water. Price is $2.65 to $3.15 per lb.

Princep 4L
Liquid formulation of simazine for long term control of vegetation. 5 to 10 gal. per acre of mix containing 1 qt. Princep per gal. water.

W.A. Cleary Corp., P.O. Box 10, Somerset, NJ 08873

Diuron 4L
Emulsifiable concentrate applied at 4 to 8 gal. per acre in water for vegetation control on golf course paths, fence rows, and around buildings. Price set by distributor.

Crystal Chemical Co., 1525 N. Post Oak Rd., Houston, TX 77055

Broadside
Liquid containing cacodylic acid and MSMA for contact spray of brush and grassy weeds. Rate is 1 to 2 gal. of concentrate in 100 gal. water per acre. Price $11.90 per gal. in 1 and 5 gal. jugs.

Herbicides are used before asphalt is laid to prevent deterioration by vigorous weed species.

Phytar 560
Liquid formulation of cacodylic acid for contact spray on rights-of-way, ditch banks, sidewalks, fences, etc. Rate is 1 to 2 gal. concentrate in 100 gal. water per acre. Price $13.35 per gal. in 1 and 5 gal. jugs.

Diamond Shamrock, 1100 Superior Ave., Cleveland, OH 44144

Dalapon 85
Soluble dalapon salt which has contact and soil action with 1 month residual. Good control of foxtail and established perennial weeds in non-crop areas. Mix 15 lbs. of salt in at least 40 gal. water for one acre. Repeat spray after two to four weeks. Bulk price is roughly $1.25 per lb.

Dow Chemical, P.O. Box 1706, Midland, MI 48640

Dowpon C
Combination of dalapon and sodium TCA. Surfactant required. Dalapon has systemic action on plants. Apply 15 to 45 lbs. per acre in 100 gal. water. Price is $1.72 per lb. in 15 lb. quantity and $1.57 per lb. in 45 lbs. quantity.

Esteron 245
Liquid 2,4,5-T for control of woody plants. Not for use on turf or near water. Apply 1 to 3 gal. per acre in 100 gal. water. Prices range from $24.83 to $23.80 per gal. Also available for an oil mixture for basal bark treatment and dormant spray.

Esteron Brush Killer
Liquid combination of 2,4-D and 2,4,5-T for control of mixed growths of woody plants and herbaceous weeds. Rate is 1 to 4 gal. concentrate mixed with 100 gal. water per acre spray. Price ranges from $18.90 to $17.88 per gal.

Kuron
Liquid silvex (2,4,5-TP) for control of woody plants and weeds (not stoloniferous grasses). Rate 1 to 3 gal. concentrate in 100 gal. water or oil per acre. Also acts as aquatic herbicide. Can be used as dormant and basal bark spray. Price ranges from $27.22 to $25.38 per gal.

Tordon 101R Forest Herbicide
Ready-to-use liquid herbicide containing picloram and 2,4-D. Applied full strength to stumps and cut brush to prevent regrowth. One gal. jug cost $9.60. Only picloram product not restricted use.

E.I. Du Pont De Nemours Co., Biochemicals Div., Brandywine Bldg., Wilmington, DE 19898

Amate
Soluble powder of ammonium sulfamate for control of woody plants and short term weed control. Two or three applications per year. Mix 60 lbs. powder in 100 gal. water per acre. Non-volatile and non-flammable. Comes in 50 lb. drums.

Continues on page 48

Big John Makes This a REAL Money Tree.

here's why

- By far the *fastest* transplanter available.
- Largest tree "spade" on the market. 78" width handles 7000 lb. root ball! (But big as it is, it still meets standard road width limitations.)
- Starts returning investment immediately because of outstanding demand for the BIG tree!

If YOU would like to know just how profitable that money tree can be with a BIG JOHN, you'll want our prospectus of investment. That, plus a demonstration of BIG JOHN'S money making ability are yours at no obligation whatsoever.

86" and 50" BIG JOHNs now being developed, for information just call or write:

big trees today inc.

Gerald Bredlau
5362 Clarice Circle
Stevens Point, WI 54481
Telephone (715) 341-2895

Manufacturer's Representative for Big John Tree Transplanter and Complete Line of Arborist Supplies

Circle **142** on free information card

An in

Cylinder and crankcase assembly of The Green Machine 22.5 cc engine. !.2 H.P. in a 6-lb package. Over 5 years of field exposure have helped create new standards of 2-cycle performance.

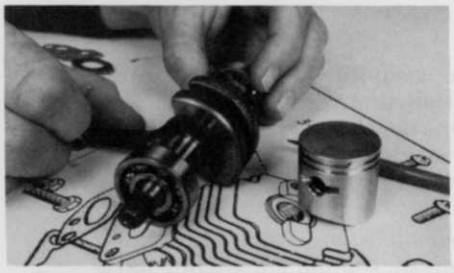
©1979, HMC, Torrance, CA. GM 266

The Green Machine trimmer-pruner-cutter.

side look at a classic.

In 1972, The Green Machine introduced a gas-powered string trimmer employing a new concept —extreme light weight combined with amazing torque. It proved the ideal tool for high production weed and grass trimming, as well as brush cutting and tree pruning. From the start, Green Machines set new industry standards for quality—and new records for time-saving and money-making. The reasons are basic: ingenious design and a fanatic devotion to excellence.

For instance, The Green Machine



model 3000 engines have been dynomometer tested—at full throttle and full load—for 200 hours. That's equal to 600 hours of field operation. Actual field operation of 1000 to 1500 hours is common-place.

Chrome and hone

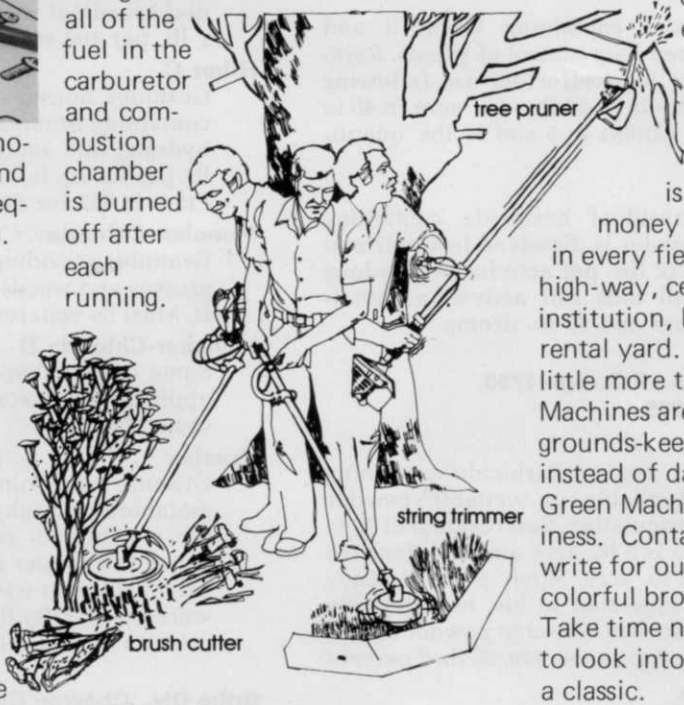
To understand what's behind Green Machine performance, just take a look inside a model 3000 engine.

You'll see a precision die-cast cylinder with polished chrome-plated bore—plus such refinements as piston-port fuel timing and almost five square inches of scavenge porting. Running inside that chrome-protected cylinder, you'll see a precision die-cast aluminum piston, micro-honed and fitted with double, positively-located rings.

You'll also see a crankshaft and rod assembly of high-carbon steel, precision-machined, and aligned to ±.001 -inch tolerances, running with high-speed ball-type main bearings and needle-type rod journal bearings.

Easy starting with P.F.S.

Long engine life is a recognized Green Machine virtue. So is easy starting. Thanks to a proven, reliable fuel pump and carburetor design. Plus an important Green Machine exclusive: Positive Fuel Shut-off. Engine "kill" is accomplished by stopping the fuel supply to the engine, rather than by cutting the ignition. This means that all of the fuel in the carburetor and combustion chamber is burned off after each running.



Fresh fuel is used for each start. Conventional "ignition kill" allows the fuel and oil mixture to remain in the chamber and carburetor where it can become stale and even, with time, create a residue that prevents starting.

Nine heads and blades

Green Machine introduced the first professional-quality Tap-For-Cord automatic string-feed head. A total of five different string trimmer heads are now offered as well as four quick-change blades.

A string trimmer... and more

The Green Machine is a great string trimmer—and a great brush cutter, and tree pruner. With accessory metal blades, one man can clear up to an acre of brush a day, cutting easily through vines up to ¾-inch thick. Tree branches up to three inches thick can be sliced through easily— in a single stroke.

See what's in it for you

The Green Machine is saving time and making money for thousands of users in every field: park and municipal, high-way, cemetary, estate, golf course, institution, landscape, farm, school, rental yard. Crews equipped with little more than mowers and Green Machines are completing massive grounds-keeping chores in hours, instead of days. See what The Green Machine can do for your business. Contact your dealer or write for our new, colorful brochures. Take time now to look into a classic.

HMC, 22133 S. Vermont, Torrance, CA 90502

The Green Machine®

A yard-care classic.

Circle **131** on free information card

Nonselective weed control

Du Pont continued from page 44

Hyvar X
Wettable powder containing bromacil for season-long weed and brush control. Very effective on perennial grasses. Mix 15 to 30 lbs. in 100 gal. water for handgun spraying an acre. Available in 4 and 50 lb. quantities.

Hyvar XL
Liquid formulation of bromacil for use diluted 6 to 12 gal. concentrate in 40 gal. water per acre or undiluted as basal spray for brush. Comes 1 to 30 gal.

Karmex
Wettable powder containing diuron for season-long control of weeds and as a soil sterilant. Rate is 20 to 60 lbs. of Karmex in 40 to 100 gal. of water per acre. Available in 4 lb. bags and 50 lb. drums.

Krenite Brush Control Agent
Contact herbicide liquid containing fosamine ammonium. Rate of 1½ to 3 gal. concentrate in 50 to 300 gal. water per acre. Apply in late summer or early fall for slow defoliation during winter. Can be used near water. Comes in 1.5, and 30 gal. amounts.

Krovar
Wettable powder containing bromacil and diuron for season long control of weeds. Rainfall needed for most effective use following application. Rate is 19-40 lbs. per acre in 40 to 100 gal. water. Comes in 5 and 50 lbs. quantities.

Velpar
Contact and residual herbicide containing hexazinone. Powder is dissolved in water and applied at 6 to 12 lbs. per acre for season-long control. Rainfall aids soil activation. Available in 4 lb. bags and 50 lb. drums.

Elanco Products Co., P.O. Box 1750, Indianapolis, IN 46206

Spike
Total vegetation control herbicide containing tebuthiuron. Available in wettable powder and granular formulation. Soil residual of 12 to 15 months. Rate is 5 lb. acre and maintenance rate of 1½ to 2 lb. acre. Apply prior to heavy rainfall. Price suggested 50 lbs. box wettable powder $536, 4 lb. box wettable powder $43.75, 50 lb. of 1 percent granular $29, 50 lb. 5 percent granular $82.

Surflan
Wettable powder containing oryzalin applied prior to emergence of weeds around established ornamental plants. Rate 5 lb. acre applied as spray. Five lb. bag costs $35.

PBI Gordon, 300 S. Third St., P.O Box 2276, Kansas City, KS 66110.

Vegemec
Emulsifiable concentrate containing prometon and 2,4-D acid. Season long control of most annual and perennial broadleaf weeds and grasses. Mix 1 part Vegemec with 8 parts water and use large droplet spray. One gal. concentrate will control vegetation in a 900 sq. ft. area. Available in 1 and 5 gal. quantities. Price $8.70 for single gal. and $8.15 per gal. in 5 gal. size.

Monsanto Agric. Products Co., 800 N. Lindberg Blvd., St. Louis, MO 63166

Roundup
Liquid contact herbicide of glyphosate with no residual activity. Application should be made at proper time which varies among plants. There must be enough green foliage and metabolism should be on a down turn. Mix 2 to 5 qt. in 20 to 60 gal. water for one acre spray. Available in 1 and 5 gal. containers. Price is $66 for single gal. and $64 per gal. for 5 gal.

Occidental Chemical Co., P.O. Box 1185, Houston, TX 7701

Borocil IV
Water soluble granule containing sodium metaborate tetrahydrate and bromacil. Provides season long control of annual and perennial broadleaf weeds and grasses. Spread ¼ to 1 lb. per 100 sq. ft. Fifty lb. bag costs $40.

Hibor C
Granular nonselective weed and grass killer containing bromacil, sodium metaborate tetrahydrate, and sodium chlorate. Apply 1/5 to 1 lb. per 100 sq. ft. Single application per season. Price is $47 for 50 lb. bag.

Monobor-Chlorate
Granule providing 3 to 4 month control of grasses and weeds. Apply ½ to 4 lb. per 100 sq. ft. Must be watered in. Fifty lb. bag cost $18.50.

Monobor-Chlorate D
Same as monobor-chlorate with diuron. Same application lasts 8 or 9 months. Fifty lb. bag costs $23.75.

Ureabor
Granule containing sodium chlorate, sodium metaborate tetrahydrate, and bromacil lasting for a complete season. Can be mixed with water (1-3 lb. per gal.) and used as spray. One gal. of solution will cover 100 sq. ft. Should be watered in. Fifty lb. bag costs $27. Best applied prior to or just after emergence.

Ortho Div., Chevron Chemical Co., 575 Market St., San Francisco, CA 94105

Diquat
Contact herbicide and desiccant for industrial and aquatic weed control. Contains 2 lb. diquat per gal. Rate per acre is 1 qt. plus 4 oz. spreader in 50 gal. water. Label permits only use of Ortho Spreader X77 at $12.55 per gal. For smaller jobs, 4 tspns. diquat plus ½ tspn. spreader in 1 gal. water. Price is $50.50 per gal. in 1 to 54 gal. containers.

Continues on page 53

Solving irrigation and sprinkling problems takes a real Bird Brain.

For 45 years, the Rain Bird Brains have feathered the contractor's nest with everything he needs.

From trickle irrigation to automatic sprinkler systems. From pipe to fittings — even complete service facilities.

And plenty of sound advice.

So whether you're out on an irrigation limb, or just tired of squeaking by on a wing and a prayer, give your local Rain Bird distributor a call.

He'll show you why, since 1933, the best solution to your irrigation and sprinkling problems has just been a matter of using our heads.

RAIN BIRD®

Bringing new ideas to life.

7045 N. Grand Avenue, Glendora, CA 91740

If you've got a problem only a Rain Bird Brain can solve, stop by any of these fine-feathered friends:

Rain Bird Master Turf Distributors

Arizona

ARIZONA TURF EQUIPMENT & SUPPLY CO., INC., (ARTESCO), 1429 E. Hadley St., Phoenix, AZ 85034, (602) 257-0151

CARLSON'S UTILITY SUPPLY, INC., 3670 E. Speedway, Tucson, AZ 85716, (602) 325-3369

California

A-1 TURF IRRIGATION SALES, INC., 827 N. Main St., Orange, CA 92668, (714) 633-3214
Also in Gardena and Canoga Park

AUTOMATIC RAIN CO., P.O. Box 2226, Menlo Park, CA 94025, (415) 323-5161
Also in San Jose, San Rafael, Concord, Salinas and Santa Rosa

INDIO PIPE & SUPPLY, 81-245 Highway 111, Indio, CA 92201, (714) 347-0968

KERN TURF SUPPLY, 711 Lake St., Bakersfield, CA 93305, (805) 327-4048

NOR-MAC, INC., 3418 Auburn Blvd., Sacramento, CA 95821, (916) 482-2924
Also in Chico

PACIFIC PRODUCTS, 8901 Fletcher Pkwy., La Mesa, CA 92041, (714) 463-5561
Also in Carlsbad

RAINMAKER PIPE COMPANY, 1011 E. Lindsay St., Stockton, CA 95201, (209) 944-5721
Also in Modesto

SMITH BENNETT CO., INC., 16300 Raymer, Van Nuys, CA 91406, (213) 988-3222
Also in Santa Monica and Ontario

SMITH PIPE & SUPPLY, 772 Rancho Conejo Blvd., Newbury Park, CA 91320, (213) 889-2593
Also in Oxnard

VALLEY TURF SUPPLY, 1408 N. Cedar Ave., Fresno, CA 93703, (209) 251-8223

Colorado

CPS DISTRIBUTORS, INC., 560 South Lipan St., Denver, CO 80223, (303) 744-6371

GRAND JUNCTION PIPE & SUPPLY, 2870 Freeway East, Grand Junction, CO 81501, (303) 243-4604

Hawaii

PARADISE SUPPLY, 1075 S. Beretania, Honolulu, HI 96814, (808) 524-6633

Idaho

BOYD MARTIN COMPANY, 4554 Chinden Blvd., Boise, ID 83704, (208) 376-8891

Nevada

RECORD SUPPLY, 315 Record St., Reno, NV 89505, (702) 329-1741

TURF EQUIPMENT SUPPLY CO., 3558 Procyon Ave., Las Vegas, NV 89103, (702) 873-2468

New Mexico

SPRINKLER IRRIGATION SUPPLY COMPANY, P.O. Box 6933, Albuquerque, NM 87107, (505) 881-4050

Oregon

AUTO-RAIN, 10115 N.E. 6th Dr., Portland, OR 97211, (503) 283-4184

RAIN SYSTEMS IRRIGATION SUPPLY, INC., 252 Taylor St., Eugene, OR 97402, (503) 484-0315

Utah

BOYD MARTIN COMPANY, 1260 West North Temple, Salt Lake City, UT 84115, (801) 521-7202

® Rain Bird is a registered trademark of Rain Bird Sprinkler Mfg. Corp., Glendora, California.

© 1978 Rain Bird Sprinkler Mfg. Corp.

If the price
what's the bi

Cushman makes a fine turf vehicle. But does it equal E-Z-GO? It's often difficult for you yourself to make an honest comparison. So we've done it for you. We took comparable top-of-the-line models, E-Z-GO's GT-7 and the Cushman Turf Truckster. Head to head, here's what we found.

Power Source: 18 horsepower OMC engine, tightly compartmentalized. Ground speed 0 to 22 mph.

Braking: Hydraulic internal expanding.
Payload: 1000 pounds.

Suspension System: Torsion bars, leaf springs, front and rear shocks.

Dump Construction: Single wall, no undercoating.

Headlights: Single.
Seating: Single seat for one passenger with back rest and hip restraint.

Price: Virtually the same.

is the same, g difference?

Power Source: A rugged, reliable 18 horsepower Onan engine with the power to carry a full payload up to 24 mph. Substantially larger engine compartment for easier maintenance.
Braking: Improved hydraulic internal expanding.
Payload: 1500 pounds. A massive 50% greater carrying capacity than Cushman. More cubic space for greater material volume.
Suspension System: Heavy duty torsion bars, leaf springs, front and rear shock absorbers, designed to support the bigger payload.
Dump Construction: Dual wall, double thick for heavier loads, longer life. Undercoating for even greater resistance to corrosion.
Headlights: Dual lights for greater night vision.
Seating: Dual seats for two passengers with individual back rests and hip restraints, constructed for larger men, greater comfort.
Price: Virtually the same.
Summary: E-Z-GO carries a greater payload, is easier to maintain, is larger, more durably built, and safer with a wider wheel base. E-Z-GO uses top quality components from companies, such as Bendix, Borg Warner, Dana, Onan, and Rockwell International.
For the complete story on the E-Z-GO GT-7, a demonstration on your course, contact your E-Z-GO distributor. For his address check your Yellow Pages or call or write Mr. William Lanier, E-Z-GO, P.O. Box 388, Augusta, Georgia 30903, at (404) 798-4311.

E-Z-GO TEXTRON
Polaris E-Z-Go Division of Textron Inc.

Circle **149** on free information card

The Land Reclamation Report

The newsletter of mine site restoration and revegetation of other disturbed lands.

September 4, 1978/VOL. 1, NO. 3

The Land Reclamation Report

The newsletter of mine site restoration and revegetation of other disturbed lands.

LAWSUITS

Almost all interim regs upheld; possible changes up to OSM

Industry had few reasons to celebrate over the holiday weekend since it was still suffering from the impacts of U.S. District Judge Thomas Flannery's August 24 decision that struck down most of its lawsuits challenging the OSM's interim regulations. The few bright spots in the lawsuit pertained to reclamation, but even some of those decisions were sent back to the Secretary of the Interior and OSM for further comment, with no promise of revision.

The only area where Judge Flannery has told OSM that the regulations must be changed pertains to prime agricultural farmlands.

Flannery struck down the clause in the farmlands regulation saying that any land used during five of the last 20 years would be placed in the prime farmlands category. Saying the regulations was "clearly overbroad in achieving its stated purpose" he has asked OSM to come up with a new definition.

There were some partial victories. Judge Flannery has required OSM to reconsider its rule on sedimentation ponds and dams that imposes a three-foot difference between the top of the dam and the surface of the water. But OSM was only asked to reconsider this since Flannery felt it did not document its reasons for the requirement in previous court briefs. He seemed to feel that the government should more or less double-check this since "these dam requirements are absolute and there is no variance procedure."

OSM will be given 60 days to reconsider some provisions that regulate the use of valley and head-of-hollow fill for spoil disposal. The judge asked the government agency to look again at this requirement only after West Virginia cited a March 1978 interim study by Skelly & Loy, the Harrisburg, Pa. engineering firm, which has determined much less costly methods in its report titled "Environmental Assessment of Surface Mining Methods, Head-of-Hollow Fill and Mountaintop Removal."

The judge also cited the study when asking OSM to review its regulations governing design criteria for underdrains and compaction of spoils in valley fills in lifts that are less than four feet thick. He also said OSM should "take into account" that West Virginia is considering variances in the latter requirement.

The final partial victory was won on the 100-foot buffer zone requirement around intermittent and perennial streams, an area considered "critical" by the Mining and Reclamation Council of America's Dan Gerkin. Here, too, the judge only asked OSM to reconsider since the reasons for its regulations were not stated in its court brief. Flannery said he would not enjoin its enforcement since it is reasonable, supported by state authorities and technical literature, and contains a variance procedure.

Industry was walloped in other areas. The court struck down Peabody Coal Company's challenge that lands improperly disturbed prior to mining must be restored to the premining use of surrounding lands after surface mining occurs. Flannery also said the regulations do not interfere with EPA's control over water pollution, meaning OSM can set up provisions for variance and exemptions on sedimentation pond design and waste treatment management.

Road gradient requirements and sections making companies cover toxic soil with four feet nontoxic material or provide treatment to prevent water pollution were upheld.

Finally, the court upheld the limited use of terraces and the design criteria, and the right of OSM to approve the terraces.

STATE GOVERNMENT

Illinois may set no time limit on farm productivity

No official word has yet been issued in Illinois on prime farmland regulations, but the state's Department of Agriculture says it will allow coal companies as much time as they need to grow crops that produce 90 percent or more of the yields than before mining occurred.

This word comes from Michael Williams, a reclamation supervisor in the Agriculture Department. He said the state doesn't fear poor cooperation since they will be holding some of the companies assets.

"As long as we have their bond, we're not that concerned," Williams said. "If they

The New Biweekly Newsletter For Revegetation Specialists

Harvest Publishing Company, publishers of *Weeds Trees & Turf, Lawn Care Industry, Golf Business,* and five state farm magazines, has expanded its coverage of the Green Industry with **The Land Reclamation Report.**

The Land Reclamation Report covers all breaking developments regarding erosion control, surface mining legislation, and research. No other publication covers large-scale revegetation with the agronomic expertise and concern that **The Land Reclamation Report** does.

Send for your free sample copy today by filling out the coupon below. A charter subscription rate of $70 is available for a limited time. Don't delay. Mail the coupon today!

Please send:

____ free sample copy of the Land Reclamation Report.

____ the next 26 issues at the charter price of $70.
(circle one) check enclosed bill me

Name _____ Title _____

Company _____

Address _____

City, State, Zip Code _____

Signature _____

Mail to The Land Reclamation Report, Harvest Publishing Company, 9800 Detroit Ave., Cleveland, Ohio 44102.

Nonselective weed control

Ortho continued from page 48

Paraquat

Restricted use contact herbicide and desiccant. Applicators must be under the supervision of a certified applicator. Contains 2 lb. paraquat per gal. Rate per acre is 1 to 2 qt. plus 4 oz. spreader in 50 gal. water. Costs $42.25 per gal. Doesn't stain sand or sidewalks. Used in sand traps. Diquat is replacing paraquat for many uses.

Rhone Poulenc, P.O. Box 125, Monmouth Junction, NJ 08852

Chlorea Granular

Granular nonselective weed and grass killer containing sodium chlorate, sodium metaborate, and diuron. Rate of 1 to 2 lb. per 100 sq. ft. provides season long control. Will control deep rooted perennials. Rainfall helps effectiveness. Costs 75 cents per lb.

Velsicol Chemical Corp., 341 East Ohio St., Chicago, IL 60611

Banvel 4WS

Liquid dicamba formulation for control of brush and weeds. Contains 4 lb. banvel per gal. Used as ingredient for mixing with 2,4-D and 2,4,5-T. Costs $36 per gal.

Banvel XP Pellets

Ten percent dicamba pellet for spot application brush control. Apply 50 to 100 lb. per acre. Cost $1.85 per lb.

Banvel 3-20

Liquid containing dicamba, 2,4-D, and 2,4,5-T. Mix 1 gal. Banvel 3-20 with 100 gal. water per acre. Lasts 3 to 5 years for brush control. Costs $16.25 per gal.

Banvel 5-10

Oil soluble liquid dicamba and 2,4,5-T. Apply 1 to 3 gal. Banvel 5-10 in 100 No. 2 diesel oil per acre. For dormant or year-round application. Costs $20.50 per gal.

Banvel 5-20

Oil soluble liquid dicamba and 2,4-D. Can be used on drainage ditch banks where 2,4,5-T can't. Same rates as 5-10. Costs $18.10 per gal.

Banvel 7-10

Water soluble liquid dicamba and 2,4,5-T. For brush control lasting 3 to 5 years. Mix 7 to 10 gal. Banvel 7-10 in 100 gal. water per acre. Spray to runoff. Cost $18.50 per gal.

Banvel 7-20

Water soluble liquid dicamba and 2,4-D for general perennial broadleaf weed control along highways, railroads and rights-of-way. Same rate as 7-10. Costs $13.50 per gal.

ANOTHER FINE PRODUCT FROM DEDOES

Dedoes Plow

FOR THE

Toro Sand Pro

When you add the hand operated sand plow to your Toro Sand Pro, you will notice it's usefulness without noticing the price.

Rugged and simply engineered, it is effective in moving sand or leveling cart paths. It can be easily attached and should be a part of each Sand Pro.

Contact your local Toro distributor for details.

Circle **123** on free information card

NEW!

Polyethylene Tank Power Sprayers for Yard & Garden

- ***Polyethylene Tank**-Sturdy durable tank is non-corrosive and light weight.*
- ***Pump**-Only one moving part-- requires no lubrication. Delivers a 20' vertical stream at 65 P.S.I.*
- ***Spray Gun** - Aluminum pistol grip adjusts from fine mist to solid stream.*

DOBBINS POWER SPRAYER

CALL HOTLINE
800-328-6340 TOLL FREE

MASTER MANUFACTURING CO.

P.O. BOX 694, SIOUX CITY, IA 51102

Circle **151** on free information card

ASPLUNDH IS LARGE PART OF RIGHT-OF-WAY HISTORY

Much of the basic research and development of today's herbicides have taken place on utility rights-of-way. Few companies have more experience in this area than Asplundh Tree Expert Company, Willow Grove, Pa. The company has grown with both the electric utility and herbicide industries. What they have learned and how they use herbicides is worth noting.

Asplundh began trimming trees for the Philadelphia Electric Co. in 1928. Bob Poley at Asplundh explains, "There were two reasons for the three Asplundh brothers to set up a business only for the utility industry; an early misunderstanding with a property owner over permission to trim his trees and a growing need by the utilities for an outside contractor to trim and maintain clearance around wires and substations." The company has grown to more than 9,000 employees throughout the U.S. and Canada.

Timing has been a crucial factor in the success of the Asplundh Tree Expert Co. Of equal value, has been the company's willingness to change and update their operations. For instance, when the company couldn't buy the type of insulated aerial lift equipment it needed for working around electric wires, it began making its own. Now Asplundh manufactures an entire line of equipment related to line clearance work.

In addition, Asplundh's method of trimming has changed through the years. The company now uses a newer trimming method, resembling natural pruning so that the appearance and "chemistry" of the tree remains undisturbed.

"When Amchem Products, Inc. developed 2,4-D during the World War II era, the Asplundh Company, along with Amchem's Director of Research, R.H. Beatty, recognized its use for vegetation management in right-of-way maintenance.

Not only has Asplundh carefully monitored its own use of chemicals, the field men also work closely with chemical companies to test new products before they enter the market.

Therefore, when Asplundh decided to use a "total vegetation control" material, they tested to find a safe product.

Total control is desirable at substation and storage areas where a certain amount of landscaping is necessary, but the area is remote and it's uneconomical to control noxious weeds by hand. The greatest danger is using a product which can "leach" or spread to other desirable vegetation.

"Amizine (Amchem Products) contains amitrole and simazine and is one of the least hazardous materials to use around ornamental plantings for total control," says David Fritsch, a chemical supervisor at Asplundh. "Low levels rarely move outside the area in which they are applied."

According to Fritsch, utility companies maintain substations with large transformers on a crushed rock base which many people find aesthetically offensive. So, to make these areas more visually palatable, Asplundh chemically treats these transformer bases. This is one area where a total vegetation control product becomes a necessity.

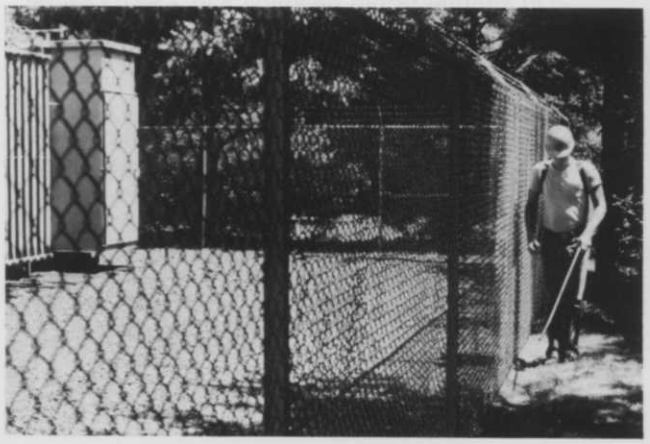
The creation of a fire break in highly flammable or potentially hazardous areas is another important use for such a product. "It can be used to destroy vegetation around refineries and tank farms where grasses and weeds could definitely present a fire hazard," says Burrell.

Asplundh is under contract with the Puget Sound Power and Light Company, Kirkland, Washington, to treat around utility poles in farming areas with a total control herbicide. For years farmers have been torching weeds in ditch banks bordering their property. While this is a quick way to get rid of the weeds, the fires often severely damage utility poles to the point that they must be replaced.

"Many methods have been used in the past to keep these poles from burning," says Asplundh. "Originally the utility tried putting metal shields

Continued on page 58

In the early days of electric line maintenance, Asplundh had one-man crews with little equipment



An Asplundh worker uses amizine to control fence-line vegetation.

SAVE

OTHER HARVESTERS SPEND YOUR MONEY
THE BROUWER SAVES YOUR MONEY

- ONE MACHINE DOES IT ALL — Rolls, Slabs, or Folds in 15", 16", 18", 24" widths. Cuts in all seasons, all grasses and all conditions, wet, dry, hard, soft, rough and even weak sod.
- REDUCED WASTE and no turf damage. Operates off the turf and cuts to fences, irrigation pipes, ditches.
- REDUCED TOPSOIL REMOVAL. Unique cutter design ensures uniform thickness and width of sod.
- ECONOMICAL and simple design using standard tractor and parts ensures LOW MAINTENANCE.
- REDUCED OBSOLESCENCE AND DEPRECIATION. High trade in value.

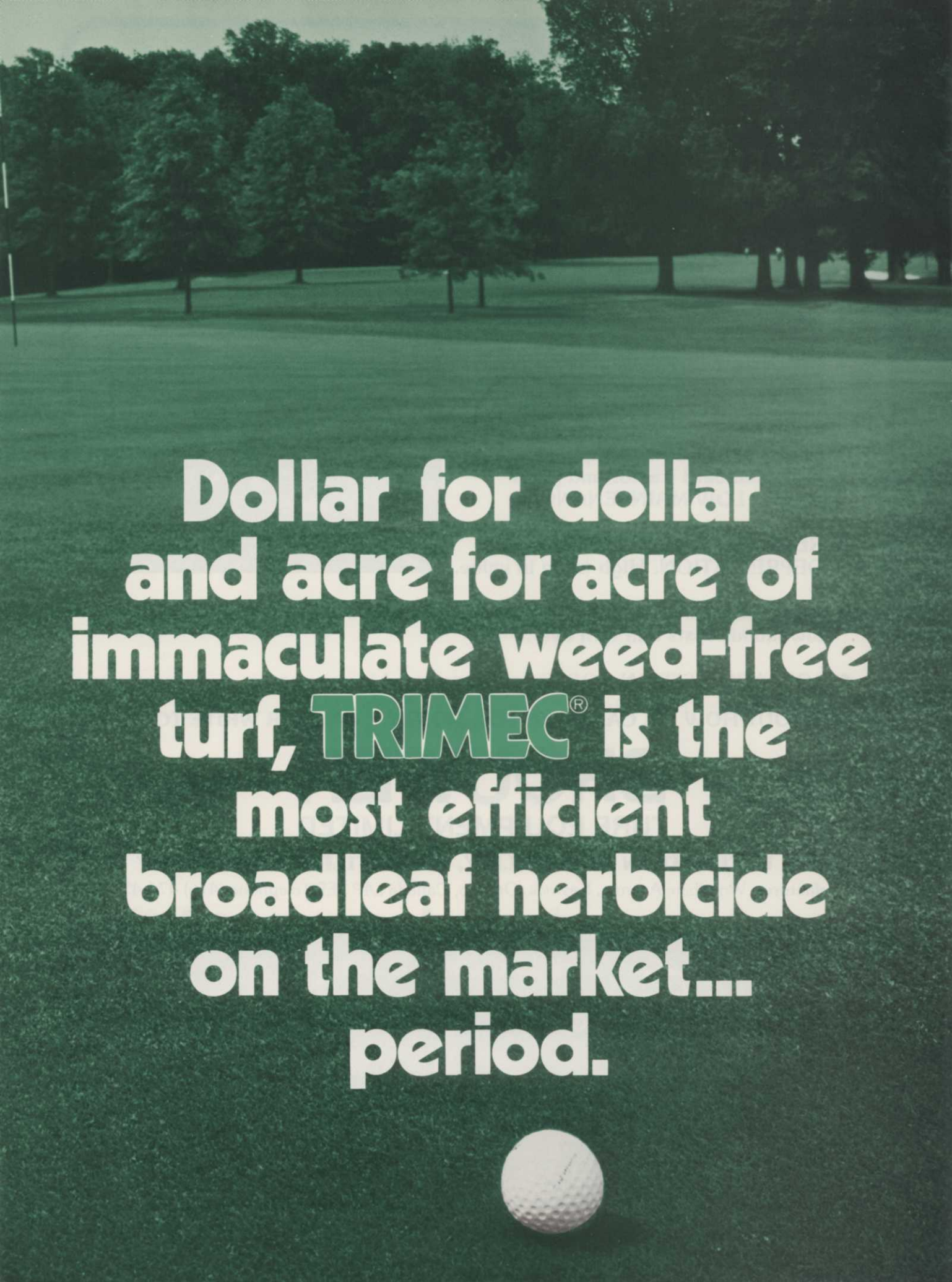
- REDUCED MANPOWER and increased employee satisfaction guarantees low labour costs and turn over.
- LOW ACQUISITION COSTS can be returned in one season.

FIND OUT HOW WE CAN SAVE YOU MONEY. CALL OR WRITE TODAY.

BROUWER
TURF EQUIPMENT LIMITED

THE ULTIMATE IN RELIABILITY, VERSATILITY & ECONOMY

Manufacturer: Woodbine Avenue, Keswick, Ontario, Canada L4P 3E9 Telephone (416) 476-4311


Dollar for dollar
and acre for acre of
immaculate weed-free
turf, TRIMEC® is the
most efficient
broadleaf herbicide
on the market...
period.

Test it...prove it. Weed-free turf costs less with TRIMEC®

Learn why no other broadleaf herbicide matches Trimec for efficiency, economy:

First, let's get one thing straight. We're not talking about dandelions and chickweeds. Sure, you have to kill them. But anybody can do that.

What we're talking about is *immaculate* turf. Flawless. Beautiful. Pure. The kind you're dedicated to producing, paid to achieve. And you can. Because that's what we do best . . . *immaculate turf.*

To have it, you need just two things: the will to have it; and the broad-spectrum power of TRIMEC . . . the herbicide that wipes out practically *all* broadleaf weeds. We've identified at least 30 species that Trimec controls. If we find one it doesn't control, we'll be very much surprised!

But power isn't all. We promised efficiency. And that goes beyond mere broad-spectrum power. Efficiency entails economy, as well. And ecological merit. And conservation of your time and energy. In all of these ways, we say TRIMEC has no equal.

How can we be so confident? Because we have massive supporting evidence based on research and testing and years of field experience by turf professionals like you. The key to this impressive performance is in the Trimec patented formulation.

Why Trimec is unique

The Trimec formula, unlike any other in the world, uses ordinary components in an *extraordinary* way. We're talking about 2,4-D, MCPP and Dicamba, the familiar chemicals. But there's a marked difference in the way they're put together. The result is best explained by the word *synergism.* That is, the interaction of Trimec ingredients produces an intense yet gentle strength: weedkill power *much greater than the sum of the components separately.* This mathematical phenomenon (a kind of 2 + 2 = 5 effect) brings important benefits:

Bent grass formula also available

Herbicide efficiency entails more than broad-spectrum power. It demands economy, ecological merit and conservation of your time and energy.

1) **Broad-spectrum power that kills practically all weeds.**
2) **A smaller chemical dosage per acre of coverage.**
3) **The consequent reduced threat to ornamentals through less root-absorption and less-concentrated "drift".**
4) **The lower cost of more efficient chemical usage.**
5) **Low-temperature efficiency: effective at 50° F. or cooler.**

Unmatched efficiency

Normally, one light application controls nearly all broadleaf weeds, even hard-to-kill species. Trimec costs less per acre of immaculate turf than any other herbicide. You use fewer gallons, you seldom need retreatment, your total cost is lower.

Environmentally sound

The same qualities that make Trimec more efficient also make it more trouble-free in use. Biodegradeable, precisely factory-formulated, Trimec eliminates "field chemistry" and the chance of mixing errors that could harm soil and ornamentals.

Trimec benefits

- Controls the wides range of broadleaf weeds
- Gets hard-to-kill species with one treatment
- Wide safety margin for lawn grasses, ornamentals
- Minimum hazard from root absorption
- No vapor action after application
- Effective weed control in wide temperature range
- Unique formula overcomes water hardness problems
- Treated areas may be reseeded within two weeks
- Non-flammable and non-corrosive in use
- Product stable several years above 32° F.
- Biodegradeable, friendly to the environment

A test proposal

Search out the worst weed patch in your turf. *On one half,* apply your customary herbicide. *On the other half,* spray Trimec at the label recommendation. Record labor and material costs. Study the results. If Trimec is not everything we say, please report your experience to Gordon's Technical Service department.

Meanwhile, get acquainted with your Trimec distributor and his full range of products and services. He's a good man to know.

Trimec® is a registered trademark of PBI/GORDON Corporation, U.S. patent No. 3,284,186

GORDON'S

PROFESSIONAL TURF PRODUCTS

pbi/gordon corporation
300 SOUTH THIRD STREET
P.O. BOX 2276
KANSAS CITY, KANSAS 66110
913-342-8780

M-C MATHEWS COMPANY lawn genie®

72" PTO Model

The Pick-Up Mower

Mow smoothly and pick up clippings in one pass! The rugged, versatile Lawn Genie thatches lawns, verti-cuts greens, tees and fairways, sweeps leaves, wades through high weeds and empties easily from the tractor. It's the pick-up mower that cleans, mows and sweeps.

36", 60", 72" cutting widths - with or without loading hopper.

Mathews Company
BOX 70, CRYSTAL LAKE, IL 60014, PHONE: 815-459-2210
Circle **129** on free information card

NOW PLANT
Husky Young
TREES
AT
Wholesale Prices

Colorado Blue Spruce plus 26 other evergreen varieties; Black Walnut plus 28 other deciduous trees including many hardwoods. Ideal for forestation, windbreaks, wildlife shelter and food, soil conservation . . . increase property value. Low quantity prices.

Send for **Free Catalog**

VANS PINES INC.
Box 768, West Olive, Mich. 49460 Phone 616-399-1620
Circle **105** on free information card

LEARN PROFESSIONAL
LANDSCAPING

We prepare you to cash in on countless money-making opportunities in modern landscaping and show you how, by easy steps, to start your own business part or full time. You will learn latest developments in Modern Landscaping, including creative design—plant propagation—revolutionary new methods of growing in manufactured soils—practical soil testing—growth regulators—the low down on fertilizers—easy ways of plant identification—estimating and contracting. My unique home study course features easy to understand assignments with careful detailed illustrations. Certificate Awarded. May. I send **FREE**, and without obligation, my informative **BOOKLET?**

LIFETIME CAREER SCHOOLS Dept. A-623
2251 Barry Avenue Los Angeles, Ca 90064
Circle **122** on free information card

around each pole or manually kept the grasses cut very short around the poles. But the metal shield acted as a furnace, transfering heat into the pole and causing it to burn, and the manual labor for cutting the grass was time-consuming and expensive."

Thus, a total vegetation control product seems to be the answer to this dilemma. Application is fast and easy, costs are low and the Puget Sound Power and Light Company has lost an average of one pole per year due to fire damage since they've been using this method — compared to up to a thousand a year with previous methods. Run-off into ditches nearby must be avoided.

Asplundh crews apply the herbicide annually in the early spring as soon as the snow melts. Higher rates are used for first treatment of poles but the rates are lowered for retreatment in ensuing years. For more efficient application of the material, Asplundh as modified a standard 300-gallon spray truck to include a boom and spring for the hose — to keep it off the ground — and a jump seat at the back for the person actually spraying. This way the crew is able to spray about 300 poles a day.

"When you consider that one pole costs about $500 to replace — not to mention the inconvenience caused by a lapse in service — you realize that the cost of spraying is merely incidental to the utility company," says Asplundh. "They look at this type of work as preventive maintenance."

Since many states have actual vegetation control regulations to prevent the spread of noxious weeds, a total control product also helps the utility companies stay within the boundaries of the law.

In addition, driveways, fenced areas and pole yards — where cable, cross arms and poles are stored — are three other places where total control is desirable.

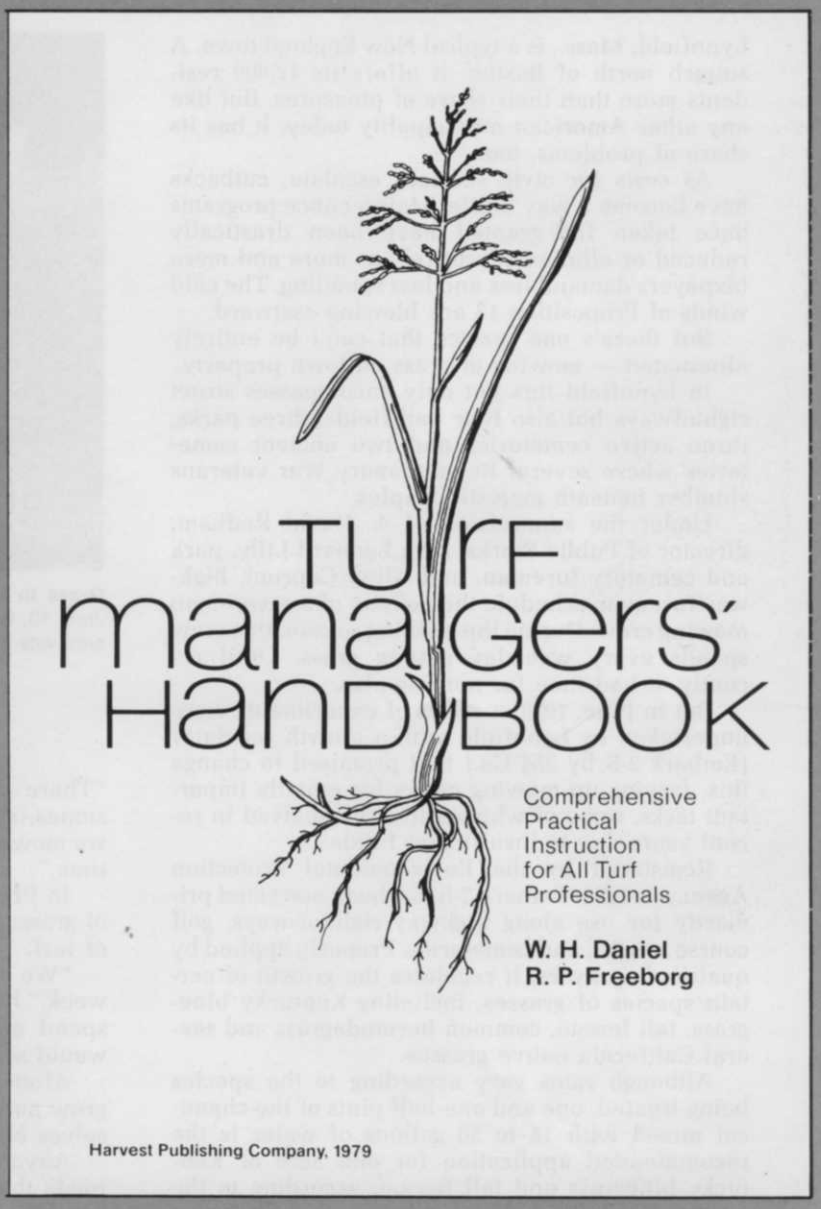
Total vegetation control represents only a small portion of the chemical services performed by Asplundh, but — other than manufacturing — chemical spraying is the biggest sideline of the company's line clearance work. **WTT**

Modern Asplundh crews have more manpower, larger trucks with larger tanks and twin-nozzle hoses for speedier application.

Managers, Instructors, Librarians

Finally, An Aid For Teaching Turfgrass

Purdue University's turf experts, Dr. William H. Daniel and Dr. Ray P. Freeborg, have coauthored a comprehensive, organized approach to learning turfgrass science and care. Based upon years of teaching experience at Purdue, Drs. Daniel and Freeborg cover management of all major turf uses today. The book, a valuable reference, includes specifications for planting, fertilizing, regulating growth, mowing, and other maintenance practices. Whether for quick reference or as a basis for all turf knowledge, the book will be among books by Couch and Beard on the reference shelf. The book is 420 pages and contains 16 pages of color illustrations.



Ordering Information

Please send_____copies of the hardback ($18.95 each*).

_____copies of the softback ($14.95 each*)

*A shipping charge of $1.25 per book must be added.

A check or money order for _____is enclosed. I would like to use my Master Charge Acct. No. _____or My Visa Acct. No._____. I understand that delivery may take six to eight weeks.

Signature _____

Name (Print) _____

Address _____

City _____ State_____ Zip_____

HARVEST
PUBLISHING
COMPANY

SUBURBAN MOWING EFFICIENCY IMPROVED BY GROWTH REGULATORS

Lynnfield, Mass., is a typical New England town. A suburb north of Boston, it offers its 12,000 residents more than their share of pleasures. But like any other American municipality today, it has its share of problems, too.

As costs for civic services escalate, cutbacks have become a way of life. Maintenance programs once taken for granted have been drastically reduced or eliminated entirely as more and more taxpayers demand less and less spending. The cold winds of Proposition 13 are blowing eastward.

But there's one service that can't be entirely eliminated — mowing of grass on town property.

In Lynnfield this not only encompasses street rightofways but also four ball fields, three parks, three active cemeteries and two ancient cemeteries where several Revolutionary War veterans slumber beneath majestic maples.

Under the supervision of A. David Rodham, director of Public Works, both Leonard Lilly, park and cemetery foreman, and Allen Caproni, highway foreman, schedule the activity of a seven-man mowing crew. During the growing season, this crew spends every weekday cutting grass. Until recently, it had time for nothing else.

But in June, 1978, a series of experiments were undertaken by Lynnfield with a growth regulator (Embark 2-S by 3M Co.) that promised to change this, freeing up mowing crews for equally important tasks, some of which had been shelved in recent years due to insufficient funds.

Registered by the Environmental Protection Agency in 1978, Embark 2-S has been marketed primarily for use along highway right-of-ways, golf course roughs, and cemeteries. Properly applied by qualified sprayers, it regulates the growth of certain species of grasses, including Kentucky bluegrass, tall fescue, common bermudagrass and several California native grasses.

Although rates vary according to the species being treated, one and one-half pints of the chemical mixed with 15 to 50 gallons of water is the recommended application for one acre of Kentucky bluegrass and tall fescue, according to the manufacturer.

An application made at any time when grass is actively growing reduces the growth of grass for a minimum of five to eight weeks. In addition to controlling turf growth, the growth regulator suppresses seedhead formation.

Leonard Lilly explained the procedures he used in Lynnfield to reduce the need for constant mowing:

"We used a 500-gallon spray tank mounted on the back of a six-wheel flatbed truck. This is the same rig we normally use for protecting trees from insects and diseases.

"We poured in 100 gallons of water at a time, added the recommended amount of chemical and sprayed with approximately 175 psi.

Lilly further stated that he applied this new plant growth regulator in a cemetery on June 10.

Grass in foreground was treated with growth regulator on June 10, while that in background was left untreated. Neither area was mowed. Photo was taken in August.

"There were no observable effects upon tombstones, shrubs or flowers. Following application, we mowed this area on July 14 for the first and last time."

In Freeman Park, a 10,000-square-foot expanse of grass, Lilly pointed out an especially lush patch of turf.

"We used to have to mow this moist spot once a week," he declared. "It was so thick that we had to spend an extra hour raking the clippings. They would smother the grass if left there."

After treating this area in mid-June, the grass grew no higher than eight inches. "We saved ourselves eight mowings just in this area alone."

Anyone who spends any time at all on public roads these days has seen what reduced mowing can lead to in terms of limited visibility and increased safety hazards that result from it.

Neglected, median strips — for instance — will rapidly deteriorate beneath a blanket of weeds that will choke out grass, shrubs, groundcovers and other desirable vegetation. In time, ailanthus, black locusts, poison ivy and other pest plants will take over as nature fills yet another vacuum.

Allen Caproni sees no need for this to happen in Lynnfield, because future use of the plant growth regulator should reduce mowings, thereby making funds available for broadleaf control.

"After all," he said, "this year we've cut the chemically treated areas only once in some cases and not at all in others. As a result, our work crew has had time to clear high brush from around the town ball field and accomplish other important jobs." **WTT**

Looking for extra growth?

Give the job to JOBE.

When you use Jobe's Tree and Shrub Spikes, it's like adding a gentle giant to your groundskeeping crew. Forget expensive and time-consuming hole-drilling. Just one man with a hammer can get the job done quicker, more easily and with remarkable results.

Sands Point Golf Club Gave the Job to Jobe.

John Gresh, superintendent of Sands Point Golf Club in Sands Point, L.I., New York, tells of his results: "Where I used Jobe's Spikes, pines and evergreens grew 9 inches in 1978, compared to only 4 inches on unfertilized trees. In 5 years, that means two feet of extra growth."

John Gresh found Jobe's Spikes save time, equipment and labor costs. "Pouring tree and shrub fertilizer into drilled holes used to be a time consuming and expensive way to feed trees. That's probably why more of them didn't get fed."

Try Jobe's Triple 5 Program

A 5" diameter tree needs only five spikes. You can pound them into the soil around the tree in 5 minutes. Jobe's exclusive patented binder compresses 16-8-8 fertilizer into easy-to-drive spikes that provide uniform release of plant food for fast but sustained tree growth.

Call your Jobe's distributor and order as many cases as you need. Or order direct. $30 per case (105 spikes) prepaid, 5 case minimum. 15 or more cases, $25 per case; 36 or more, $22.50 per case. Also try Jobe's Evergreen Spikes 12-6-8 and Fruit Tree Spikes 5-15-15.

Jobe's ...the big tree maker

Jobe's® TREE & SHRUB SPIKES

The easy method for professional tree care.

International Spike, Inc., P.O. Box 1750, Lexington, KY 40593

Now's the time for two of the BEST.®

Turf Supreme plus Balan*

Ideal for late winter or early spring application. Contains Turf Supreme, the West's number one turf food, plus Balan, recognized by professionals as a consistently-effective pre-emergent herbicide that can be used with confidence. Gives long-term control of Crabgrass, Poa Annua, Goosegrass, Foxtail and Barnyard grasses. Rain won't leach Balan out of weed control zone. May also be applied prior to weed germination in late summer and early fall.

Turf Disease Control

The professional's choice for dependable control of a wide variety of turf and ornamental lawn diseases. Specifically formulated with 2.5% Daconil** granules for use on more than 25 grass species and varieties. Apply in late winter or early spring for effective control of 8 common turf diseases including Large Brown Patch, Curvularia, Gray Leaf Spot, Helminthosporium Leaf Spot, Melting Out, and Copper Spot in turf and Stem Rust on Bluegrass. One bag covers 4,000–6,000 square feet.

BEST
Turf Disease Control
2.5% GRANULAR
BEST
For control of Large Brown Patch, Curvularia, Gray Leaf Spot, Helminthosporium Leaf Spot, Melting Out, Copper Spot, Snow Mold in turf, and Stem Rust on Bluegrass

For more information, contact your local Turf Product Distributor or Best Sales Representative.

BEST
BEST PRODUCTS

Western Division
P.O. Box 267
Lathrop, CA 95330
(209) 858-2541

Southwest Division
P.O. Box 5356
Houston, TX 77012
(713) 923-2014

Division of ZOECON CORPORATION

* Balan is a registered trademark of Eli Lilly.

** Daconil is a registered trademark of Diamond-Shamrock.

Circle **161** on free information card

MICHIGAN NURSERYMAN BOASTS OF TRICKLE IRRIGATION BENEFITS

By Dan Hager, Lansing, Michigan

Trickle irrigation may not be for everyone, but as far as David Farley of Farley Bros. Nursery, Inc., of Albion is concerned, it's the best way to go. Eventually his entire stock of deciduous shade trees will be watered by that system. He's also trying it out on spruce and pine.

Trickle irrigation is especially well suited to his type of operation, he feels. He grows his trees larger than most nurserymen and spaces them out more widely in the fields. His soil is also lighter than in many nurseries. It's been classified as a Hillside sandy loam.

But trickle irrigation is a booming technology that has developed far beyond the experimental stage. Most of the early bugs have been worked out. Michigan fruit growers are sold on it and have been converting their orchards to it by thousands of acres per year. For nurserymen it's a technology worth knowing about.

Basically what the systems do is deliver very small amounts of water to the growing stock exactly where it needs it the most — directly to the root zone. Water reaches each such zone through a network of pipes, usually consisting of a large main line and smaller laterals running down the rows of trees. The key to the effectiveness of a trickle irrigation system is the emitter — the tiny opening in the pipe network at each tree, permitting minute amounts of water to trickle out at precisely the correct spot and at precisely the correct rate.

As might be expected, most of the development of trickle irrigation systems was done in arid regions of the world, where a little water has to do a lot of work. The basic concept appears to have originated in greenhouse applications in England, according to Dr. A. L. Kenworthy of the Michigan State University horticulture department, the pioneer trickle irrigation researcher in the Midwest. "The technology was picked up and used in Israel in the late '60s, where it was called drip irrigation," Kenworthy said. "Next it moved to Australia, then it came into the U.S. by way of California, and then to Michigan. As far as the eastern states are concerned, there is more trickle irrigation in Michigan than anywhere else. I'd guess there are 70,000 acres with it now in Michigan orchards."

Farley got involved in 1972. "As far as we know, we were the first in the world to use trickle irrigation in the field production of nursery stock," he said. "There's more interest in it now, and more nurseries are using it."

Farley worked closely with MSU doctoral student Harry Ponder, who wound up his dissertation on trickle irrigation in 1975 after doing all his field research at Farley's nursery. It dealt to some extent with earlier technology, some of which has become superseded in the fast-moving trickle irrigation world. Kenworthy says, "There is a lot of development still going on. They do take a lot of maintenance."

Emitter, inserted directly into laterals through a hole punched at the base of each tree, simplifies and shortens the installation process.

The problems are outweighed by the advantages, however, in the opinion of Farley and his foreman Barry Benson, both of whom take little prodding to start talking enthusiastically of their own trickle system.

"One of the most significant advantages is the capability of tailoring the root system, that's the specific area that excites me the most," Farley said.

"We get a greater root system with a greater root surface. We not only increase the amount of feeder roots, we also get a greater amount of structural roots. We've determined to our satisfaction that we can influence the location of the roots, to where we have them nearly all in the soil ball."

To do so, however, takes precision — "the right rate of water, the right duration, and water directly at the tree." The principle is rather simple, though. The roots develop mostly where the water is, so if the bulk of the moisture is localized within the zone which will make up the eventual ball, the roots will proliferate right there.

That regulated supply of localized moisture leads to another advantage. "Trickle irrigation keeps the soil in a good moisture condition for digging," Farley said. "That's particularly helpful for our summer or early fall balling."

Trickle irrigation also minimizes transplant shock for the trees the first year in the field. "The risk of first-year loss is reduced," Farley said. "Daily watering from the time of planting does the trick." Farley is now able to keep his tree mortality down to about one-tenth of one percent the first year in the field.

The trees even start growing that first year. "Ordinarily their energy goes into the roots the first year to overcome the shock," Benson ex-

STOP

Before you do anything to your lawn this spring, the following should be of interest and great help:

NATURE'S METHOD *Produces* THE GREEN MAGIC SYSTEM

TO REINFORCE WHAT YOU ALREADY KNOW . . .

1. Nature has a method and a rhythm that makes plants (lawns) grow healthy & beautiful.
2. Man has a distinctive ability that quickly destroys nature's positive responses.

Learn how you can help nature improve your lawn & your own professional image.

GREEN MAGIC SYSTEM

If you are looking for a positive approach to turfgrass management that will produce better results than any other method available, one that will build your image as an authority on a truly professional basis, then you will want to consider the GREEN MAGIC SYSTEM.

There are available a vast number of fertilizers, weed killers, pesticides and other types of chemicals designed for general application but very few of these take into consideration local soil and environmental conditions.

Because of the wide use of these products, and due to the fact that they are manufactured for mass consumption on a national basis, the general public believes that these products are the "cure-all' and therefore, the only method of obtaining desired results. But, the opposite has become more and more evident. Instead of grasses and ornamentals becoming more beautiful and stronger, they are becoming weaker and more susceptible to stress conditions, wear and tear, insects, disease, etc.

Over 30 years of extensive research has been expended by Agro Chem in developing a system to overcome such problems. As we investiaged man's synthetic aproach to improving the health and vigor of turf grasses and ornamentals, it has become evident that natural methods were far superior and that man's artificial approaches just create more problems.

The **GREEN MAGIC SYSTEM** has been developed through these years of extensive research. It is a system that actually works with nature, her rhythm and her many natural complexities; one that encourages plants to grow naturally stronger and more resistant to unfavorable environmental and soil conditions and other adversities.

Rather than trying to create a product to offset an adverse condition, which has been the standard method of developing products and processes to help grow plants healthfully, Agro Chem has directed its research & development towards finding out how plants, especially turf grasses, have been able to sustain themselves and continue to grow for millions of years without the aid of man. With every step of research new discoveries were made, unlocking the secrets of nature and resulting in a complete system that actually encourages plants to grow naturally. This means that they become hardier, sturdier, deeper green in color, have deeper, stronger root systems and become healthier than ever before possible. When the plant becomes stronger, it is more capable of resisting insect and disease attacks, adverse weather and other unfavorable conditions that are common to the life of all living organisms.

THE DEVELOPMENT OF GREEN MAGIC AS A COMPLETE SYSTEM INVOLVED THE FOLLOWING CONSIDERATIONS:

1. PROVIDING A COMPLETE NUTRITIONAL DIET IN THE PROPER CHEMICAL & PHYSICAL FORMS FOR THE PLANTS DESIRED.

Each species of plant requires certain conditions for ideal growth. If these conditions are met, the plant will grow luxuriantly. Conversely, when these conditions are not met, plants will slow down in their growth, weaken, and eventually be replaced by other, less desirable plants that are more adaptable to a change in environmental conditions. This process is called "The Evolutionary Process"; where one plant will replace another plant as conditions change in a local soil or geographical area.

Nutrient availability is one of the most important of these conditions and Agro Chem has determined exactly the nutritional requirements of the various turfgrasses to provide optimum vigor and growth. Nutritional requirements encompass a complex system that involves not only the primary nutrients (nitrogen, phosphorous, potash), but the secondary and micro nutrients (calcium, magnesium, sulfur, iron, manganese, copper, zinc, boron and many others), all contained in a natural form that can be absorbed by plants without weakening or damaging the plant, soil or micro organisms life within the soil.

Strange as it may seem, most of the ingredients supplied to the soil artificially, by man, are in a form that is often quite toxic to the plant, soil and micro organism life, as well as being unnatural. Our research studies have shown us that many ingredients used to stimulate plant growth are applied to the soil without any consideration or knowledge of what the plant requires and how this whole nutritional system works in nature and without any regard to the entire natural cycle that makes nature work so well.

Research has shown that nature is not so ready to accept these synthetic, unnatural applications. Even though there may be initial positive signs in growth response, many detrimental things happen with repeated applications. Thus, a natural system must take all this into consideration in order to get a natural growth response.

2. IMPROVING THE SOIL

In the turf grass field, the soil has been taken for granted and not much concern has been shown for its improvement or what soil conditions are best for growing turf grass. Agro Chem's extended research has shown that the soil is one of the most critical components of this natural system and it must be handled very carefully because the condition of the soil determines the quality and depth of the root system and the over-all health and beauty of desirable turf grasses.

It has long been known, especially in the farming communities, that continual application of chemical fertilizers and pesticides to the soil reduces the productivity of the soil by killing soil microbes and destroying soil aggregates which causes many problems such as: Excessive amounts of unnatural erosion run-off and pollution of the underground water tables, streams, ponds and other natural water holding areas.

The soil, instead of becoming more productive and building up its organic matter residues and its micro organism activities, becomes drastically depleted of its organic matter content and otten times becomes stratified, with layers of sand, silt and clay making the soil more compact and less penetrable by air, water

and nutrients. The soil becomes less suitable for the growth of desirable plants and encourages their roots to grow toward the surface instead of deeper into the soil.

3. THE IMPORTANCE OF SOIL ORGANISMS

Soil organisms are responsible for natural decomposition of dead organic matter and development of the essential organic matter and humus within the soil. A highly organic soil is a very productive soil which is capable of supporting optimum plant growth. Soil organisms include bacteria, fungi, and virus organisms, plus many other living creatures within the soil. These contribute to the soil complex and are responsible for the natural relationships between plants and soils.

The application of various types of fertilizers, herbicides and pesticides has an immediate impact on the life within the soil. From continual use or misuse of such products, the soil can be changed from a desirable to an undesirable condition which diminishes the health and vigor of the desirable plants.

If these beneficial soil organisms are missing, they are replaced under the GREEN MAGIC SYSTEM. Such continual chemical applications destroy the beneficial microbes that play a major role in bringing nitrogen into the soil and making the complete chain of nutritional elements available for plant consumption. These micro organisms are responsible for the decomposition of plant litter (mat & thatch in lawns) and when the microbes are destroyed, mat & thatch does not decompose, but instead, accumulates at the soil surface, restricting the penetration of air, water and nutrients, which therefore restrict the penetration of roots into the soil. This situation encourages these roots to grow on the surface — creating additional mat & thatch accumulation.

Mat & thatch is unnatural and undesirable because it holds moisture (like a sponge) on the surface of the soil. Sunlight warms it and creates a condition of high humidity and high temperature which is ideal for the invasion of pathogenic disease, insects and other unfavorable occurrances.

Considerable research was undertaken to look into the pathogenic organisms and insects that primarily invade turf grasses. Insects, fungus and viral disease are constantly associated with turf grasses in nature; only when man interferes, using his artificial methods, do these pathogens commonly get out of control where attacks reach epidemic proportions. Once the growth characteristics and life cycles of such pathogenic organisms were understood, there was a much better chance of providing a natural control program without the use of extensive amounts of fungicides and pesticides. THE GREEN MAGIC SYSTEM is a natural control program and therefore, helps destroy such pestulance problems.

4. ATMOSPHERIC CONDITIONS

Because plants respire or breathe just as animals do, consideration must be given towards the quality of the air and what it contains in the form of gasses and other elements which could be regarded as pollutants. Air quality plays a vital role in the plant environment. This relationship has been studied and the knowledge gained by Agro Chem has been applied in the development of the GREEN MAGIC SYSTEM.

5. SOIL TESTING

"You don't know what you don't know". One of the prime reasons for the gradual weakening of the grass and the destruction of the soil is the mis-application of fertilizers and chemicals which creates toxic conditions and most often, imbalances of all the nutrients and other vital complex soil components.

Elimination of the "guessing" technique of applying plant nutrients and replacing it with the application of precise nutrients and soil building additives, formulated to soil test requirements — produces positive grass growth responses and helps nature rebuild the soil effectively, properly and inexpensively.

Our 30 year research program dedicated to studying natural soil conditions, has resulted in the development of the Agro Chem Soil Analysis, the most complete and practical soil test available. This test has become an intregal part of the GREEN MAGIC SYSTEM.

6. SPECIAL MANUFACTURING FACILITIES

Since Agro Chem does not produce specific products that are to be consumed on a national basis, our dynamic success has been due to producing positive results whenever our system has been used. These positive results are due primarily to the fact that we take into consideration the total requirements of the turf grasses and the supporting soil. But, in order to provide positive results all the time, we have had to develop our own specialized manufacturing plant.

The facilities of Agro Chem are unique in the fact that we are able to custom-manufacture for each individual customer. Under normal conditions, this would be most costly, but because of our computerized operation, we can prescription formulate very inexpensively since labor is at the bare minimum and there is no storage of finished products. Only raw materials are stored in the plant and by simply pushing buttons on a computer, any formulation can be compounded, packaged and shipped, immediately. This computerized functioning of the plant helps make the GREEM MAGIC SYSTEM so unique and successful.

7. TRAINING

In order for our dealers to have the ability to completely satisfy their customers, they require special training in the total GREEN MAGIC SYSTEM. Because our system is based on the complex interactions of nature and how our unique formulations work with Mother Nature, when applied at the correct rates and at the proper times, it is of added importance to have all of these facts to obtain positive results on a repeatable, authoritative, professional basis.

Because commercially available products do not have the same characteristics or behavior reactions of the GREEN MAGIC SYSTEM, it is also most important to learn the characteristics of these unique formulations and when, where and how to use them so that results are always the same.

Our unique training system provides the information needed in a very simple, logical way so that everyone can thoroughly understand the GREEN MAGIC concept and be able to apply it in the operation of their own business, immediately and profitably. In addition to this technical information, we also personally help each dealer set-up an efficient marketing system and business operation based on his individual situation.

SUMMARY

As can readily be seen, the GREEN MAGIC SYSTEM is com lex and very unique. It is highly successful due to the consideration given each condition. In order to be totally successful in the system, one must have the basic knowledge of how nature works in growing the various plants on this earth. The benefits of the GREEN MAGIC SYSTEM are many and include the following:

DEEPER GREEN COLOR — SLOWER LEAF GROWTH — GREATER DENSITY — UPRIGHT LEAF GROWTH— DEEPER, STRONGER ROOTS — STRONGER, MORE AGGRESSIVE RHYZOME ACTIVITY — LESS WATERING & CUTTING — LESS SUSCEPTIBILITY TO DISEASE & INSECTS — FEWER WEEDS — LESS RE-SODDING & RE-SEEDING — LESS COST — MORE FRIABLE & PRODUCTIVE SOIL — BETTER WATER & NUTRIENT RETENTION — LESS EROSION & POLLUTION — MORE ORGANIC MATTER DECOMPOSITION (REDUCES MAT & THACH) — HAPPY CUSTOMERS — YOUR IMAGE AS A TRUE PROFESSIONAL, CAPABLE OF OBTAINING POSITIVE RESULTS.

Seeing is believing and the positive results will readily reflect your ability. Your professional workmanship creates greater desire for others to have the results you can provide with the GREEN MAGIC SYSTEM.

DEALERSHIP AND PROFESSIONAL USAGE:

Dealerships are now being offered to individuals and companies desiring to sell these GREEN MAGIC SYSTEM Products and/or apply such products as a professional application service.

Because of the uniqueness of this natural system it is of utmost importance for the dealer and user to know and understand the natural and complete system along with having the ability to diagnose problems and recommend a solution (cure) with prevention proceedures that will allow nature to work effectively. Therefore, the training is provided FREE OF CHARGE with the purchase of the initial dealer product package. (A slight leasing charge for individual usage.)

Our dealer history shows that because the dealers are successful, they always desire more knowledge; therefore, advanced training is available on a continuing basis, FREE OF CHARGE to active Agro Chem dealers.

Because of varying requirements of potential dealers, a number of dealer packages are available — one to suit each and every potential dealer.

If you want to get started quickly, call us at (312) 455-6900

AGRO·CHEM, INC.
"CONTROLLED GROWTH THROUGH CHEMISTRY"

Phone: 312-455-6900

11150 Addison
Franklin Park, Ill. 60131

AGRO CHEM'S
Professional spray unit for the small, applicator, and — it is expandable for the larger area.

The basic unit includes *(as pictured)*

1—Rectangular 300 gallon holding tank — 110 lbs. w/4" fill cap & man way
1—250' light weight pressure hose
1—Electric hose reel
1—Gas engine & special Pump
1—Lawn gun with assorted nozzels
1—Pressure regulator and bi-pass unit
1 each—Suction & Bi-pass hose
1—Root feeder

This basic spray rig is designed to fit in a pick-up truck, the tank situated between the rear wheel well and cab of truck. The motor, pump and hose reel on the right side leaving the remainder of the truck bed for other equipment and supplies.

Van pictured shows the basic spray unit in the van, leaving the entire rear area for storage of products.

As you will see, these sprayer units have been designed with a great deal of thought, research, and years of experience. They are designed and built by professionals, for professionals. For more details, either call or write Mr. Joseph.

This basic 300 gallon unit can be expanded to whatever size spray rig desired by simply adding more tanks — eliminates purchasing new equipment as business expands.

Pictured:
16' Flat bed truck carrying 5 — 300 gal. tanks + 1500 gals.

2 — 500' hose reels & ability to apply as many as 5 different products or any combination required.

AGRO·CHEM, INC.
"CONTROLLED GROWTH THROUGH CHEMISTRY"

Phone: 312-455-6900

11150 Addison
Franklin Park, Ill. 60131

Circle **173** on free information card

Trickle Irrigation *from page 63*

plained. "But under trickle irrigation, we actually get top growth that first year."

The systematic application of adequate amounts of water reduces the stress that accompanies nature's erratic watering pattern, and the trees thrive accordingly. Farley calculates that trickle irrigation boosts tree growth by about 20 percent ahead of normal.

Tree health is also improved by the systematic application of fertilizers, which are introduced into and distributed throughout the trickle irrigation network. There is also grower health involved in that setup — remarkable reductions in fertilizer costs because smaller amounts are used and they're used more effectively. There is practically no wastage because of the targeted applications — just the root zones are fertilized, not the weeds out in the rows and not the nearby creek that gets the runoff. Farley estimates that fertilizer savings of 96 percent can be realized.

It may also be possible to effectively apply pesticides through a trickle irrigation system. Farley is cooperating with MSU entomologists in research on this application. More work will be done next summer. If the efforts prove successful, fruit growers are also likely to adopt the technique.

All these benefits have prompted Farley to plant each year's deciduous tree crop with trickle irrigation — between 20 and 30 acres each year. He has a total of about 120 acres now under the system, with about 50 acres of older trees still with conventional watering. His evergreen shrubs, which constitute about one-third of his plantings, will continue to get overhead irrigation. He's still making up his mind how big to go with trickle irrigation on his evergreen trees, most of which are still watered conventionally.

Farley is now phasing out the system of microtube emitters that he adopted at first. The microtubes are just that — narrow pieces of plastic tubing with very fine openings through the center for the transmission of the water.

But they have presented a lot of headaches and, according to Kenworthy, are not widely used in the industry any more. The fine holes are susceptible to plugging, either from very small sediment particles or mineralization. Farley found that his got fragile too readily and broke. And the birds loved them and apparently pulled some of them out from their connections to the lateral lines. "Maybe the microtubes wiggled and the birds thought they were worms," Farley speculated. "Or maybe the birds were smart enough to know that if they pulled them out, they'd get some water flowing out."

The microtubes also required extensive calculations in order to get the proper amounts of water to trickle out of them. The length of each such tube had to be cut exactly to compensate for differential pressure relating to distance from the water source and slope of the land.

A host of complex pressure-compensating emitters is now on the market, most featuring internal diaphragms and springs. Farley has settled on a less complicated, and hence cheaper, emitter made by Spot Systems of Redmond, Wash. It provides pressure compensation by spinning the water internally through a vortex pattern. "They work real well, and they're relatively inexpensive com-

THE PROVEN PERFORMER

TURF BLAZER 72"

Time tested, field tested, this rugged front mounted 72" mower is built for high capacity mowing, day in and day out, and with our "O" turning radius, you have the trimming capabilities of a small push-mower in congested or confined areas. A commercially constructed hydrostatic transmission enables the operator to establish a ground speed conducive to his varied mowing conditions.

Other sizes manufactured are 48", 60", 82" and 180" plus a full line of attachments. Are you looking to get the most for your mowing dollar? Call your local Turf Blazer distributor and ask for a demonstration.

Circle **119** on free information card

Manufactured by HOWARD PRICE TURF EQUIPMENT

18155 Edison Avenue
Chesterfield, Mo. 63017

For the turf you care for: season-long protection against crabgrass, Poa annua and other annual grasses and weeds with America's leading preemergence turf herbicide.

Dacthal

Dacthal is number one in its field. Not only because it is so effective, but because it controls more than 20 unwanted weeds and grasses. Applied properly, it lays down a barrier that stops early and late germinating annual weeds without affecting healthy, growing turf grasses. Tough weeds like crabgrass and Poa annua can't stand up to Dacthal.

The help you need for total turf care.

Dacamine® provides postemergence control of over 70 broadleaf weeds including dandelion, annual chickweed, knotweed and Canada thistle. It works right down to the roots. So tough perennials don't return.

Daconate® is the postemergence herbicide that knocks out nutsedge, chickweed, wood sorrel, sandbur and other grassy weeds. It's a ready-to-use liquid herbicide with a built-in surfactant for uniform wetting.

Daconil 2787® is the broad-spectrum fungicide that stops nine fungus diseases on turf. Use it from spring to fall to prevent dollar spot, leaf spot, red thread, stem rust of blue grass, large brown patch. It's effective even in hot weather. Provides disease control on a number of ornamentals.

Count on the big four from Diamond Shamrock to make your job easier.

Circle **111** on free information card

Diamond Shamrock
The resourceful company.

See your turf chemicals supplier, or contact the Diamond Shamrock Agricultural Chemicals Division sales office nearest you: Three Commerce Park Square, 23200 Chagrin Blvd., Beachwood, OH 44112 • 1760 The Exchange, Suite 100, Atlanta, GA 30339 • 5333 Westheimer, Suite 850, Houston, TX 77002 • Commerce Plaza Bldg., 2015 Spring Rd., Oakbrook, IL 60521 • 617 Veterans Blvd., Redwood City, CA 94063.

pared to the other pressure-compensating emitters," Farley said. "They're more expensive than microtubes, but we can justify the extra cost by the better performance and the time saving."

The latter is a major item. The microtube installation required from one to three weeks to allow for land survey, calculations, cutting and insertion of the tubes. With the vortex emitters, the workers can go right down the laterals, punch holes in them where they are adjacent to the tree trunks, and then insert the tiny emitters. And since these laterals are laid at the same time the trees are planted, the whole installation can proceed across a block of trees as smoothly and efficiently as a squad of soldiers across a parade ground. The trees are getting their water almost before they realize they need it.

The laterals are half-inch flexible polyethylene pipe, of relatively lightweight grade, which is adequate because the water flow through them is of low pressure. Farley snakes the laterals S-fashion around each succeeding tree down the row, with a pile of dirt over the pipe between each tree. The intent is to compensate for the detrimental effects of expansion. As the pipe expands and contracts through varying weather, the differential is taken up between the trees, with sidewise movement, and each emitter remains where it's supposed to be — right at the tree trunk. A wandering emitter would lead the roots to wherever it happened to be, and the localized, compact root ball would not develop properly.

For his main lines, Farley uses two-inch poly pipe, rather than rigid PVC pipe as he did earlier. Again the flexibility pays off. The poly pipe can be unreeled and knifed in like a cable layer beneath the surface. "Stay away from PVC pipe simply for the ease of installation," Farley advised. "The subsoiler blade can put in the poly pipe at one-half mile per hour, and you're really whistling Dixie."

Farley also sticks to a maximum diameter of two inches for his main line. If more water is needed, he will install a second line of the same size next to it, rather than putting in a single larger pipe. He keeps friction loss to a minimum that way and avoids having to go to rigid pipe.

Filtration is critical to efficient operation of the system. Farley uses filters with at least 100 mesh per inch to keep even tiny sediment particles out. The vortex emitters can also be back-flushed for easy cleaning, in case sediment does get in.

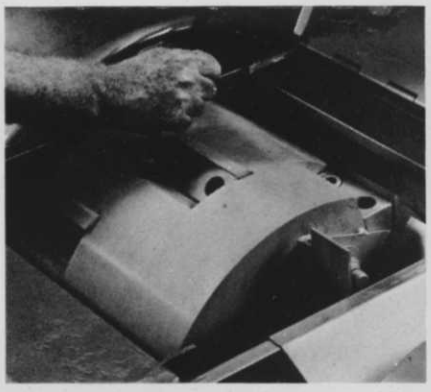
A typical block of trees might range up to 45 to 50 acres off a single five-inch well with a five-horsepower motor, but Farley also installs time clocks and solenoids so that each block is broken into zones that are individually watered. Nutrients such as liquid nitrogen can be added to trickle irrigation systems either by injection pumps or pressure-drop devices.

The whole network is set up so that the trees get what they need, most efficiently and at a low cost. In a few years, every deciduous tree in the nursery will be getting the advantages of trickle irrigation. **WTT**

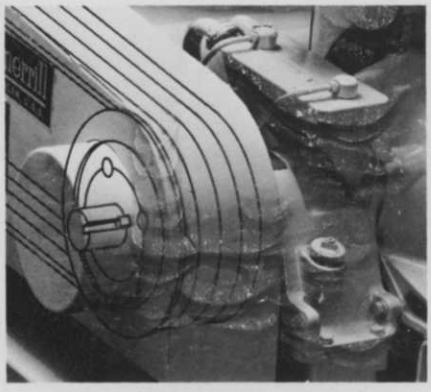
"Sound Conditioned" M & M Brush Chippers for... less noise... more efficiency

Applying engineering designs which "Sound Conditioned"* our industrial scrap reduction machinery, Mitts & Merrill can modify our brush chippers for low noise levels. At the same time, those engineering features which have made Mitts & Merrill the leader for years have been retained.

*Copyright Mitts & Merrill, Inc., 1973, 1974, 1975. All rights reserved.



Staggered knife pattern, for years a Mitts & Merrill feature, has always resulted in a lower noise level. First, by segmenting the noise source. Second, through smoother cutting action. Third, by producing smaller chips.



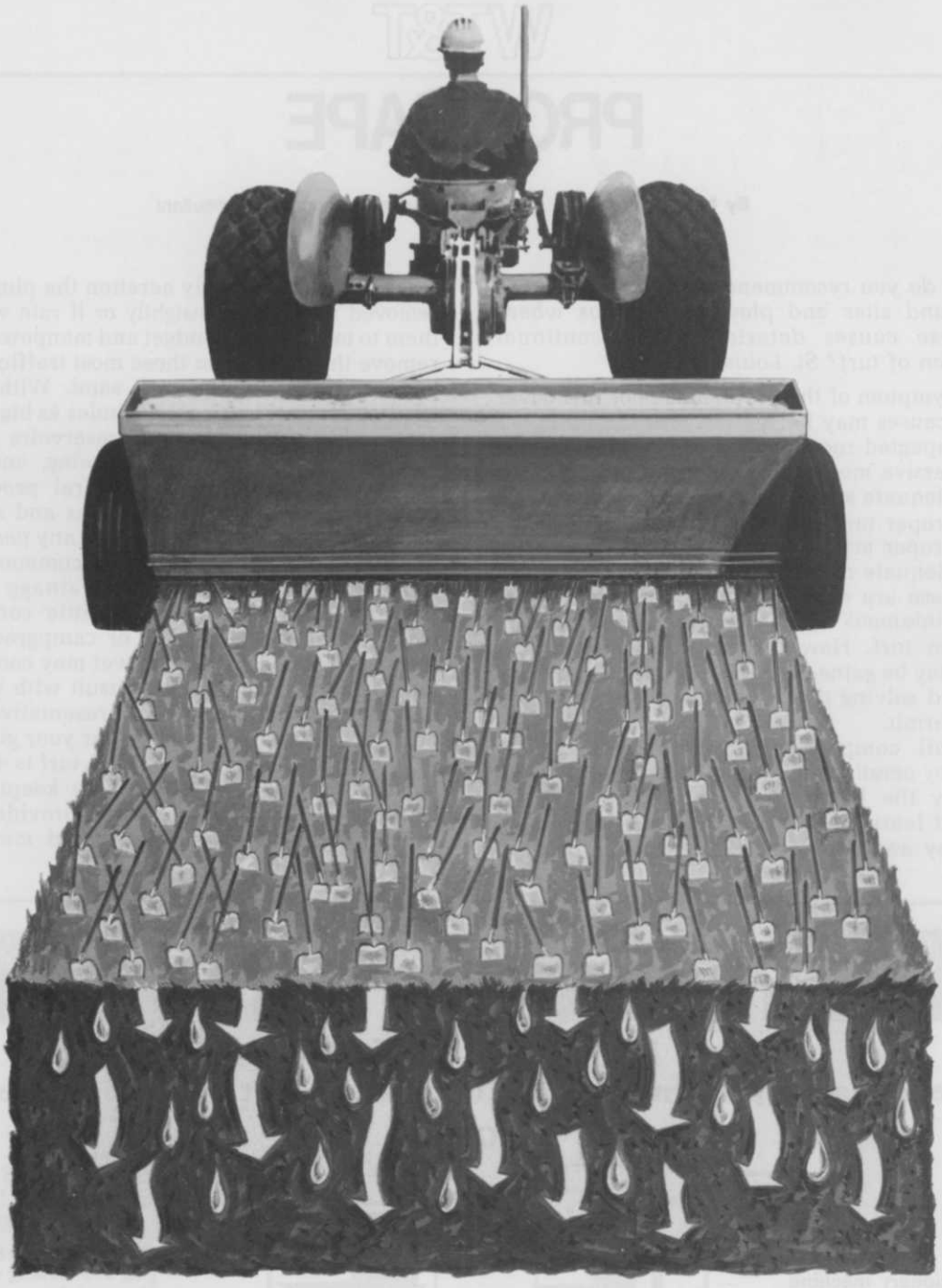
Optional torque converters and the heaviest steel cylinder — even without an external flywheel — combine to give positive cutting action under the most rugged conditions. Isolates the engine from shock. Minimizes maintenance.

Plus • **Positive safety-lock pin** for greater operator safety • **Swing-away, folding feed chute** protects cutting chamber; allows instant access and increases maneuverability • **Heavy duty construction** includes coil spring, torsion-type suspension, and box tubular steel frame.

mitts & merrill — SUBSIDIARY walco WALCO NATIONAL CORPORATION

Dept. WTT 52, 109 McCoskry St., Saginaw, Michigan 48601

Circle **109** on free information card



Easy way to loosen heavy clay soil! Works like millions of tiny hoes.™

Sof'n-Soil™ Gypsum works its way down to loosen heavy clay soil so it can breathe. Lets air and water penetrate, boosts efficiency of costly fertilizers. Sof'n-Soil, a natural mineral, stimulates vigorous root systems—promotes growth of grass, trees, shrubs, and flowers. Ecologically safe, Sof'n-Soil *is not lime.* It's neutral, non-caustic, non-burning—harmless to plants, pets, and people. And here's the bonus: Sof'n-Soil supplies essential calcium and sulfate sulfur in readily available form, stimulates decomposition of organic materials, too. Write to us at 101 S. Wacker Dr., Chicago, Ill. 60606. Dept. WTT-29.

CHEMICALS DIVISION
UNITED STATES GYPSUM
Primary Supplier of Secondary Plant Nutrients

Circle **162** on free information card

PROSCAPE

By Michael Hurdzan, Ph.D., golf course designer and consultant

Q: *What do you recommend for rehabilitation of campground sites and playground areas where heavy use causes deteriation and continual destruction of turf? St. Louis, MO*

A: The symptom of the problem is poor turf cover and the causes may be:

1) Compacted rootzones.
2) Excessive mechanical damage to the turf.
3) Inadequate surface and subsurface drainage.
4) Improper turf varieties.
5) Improper maintenance practices.
6) Inadequate maintenance budget.

All of these are complicated by the fact that St. Louis is infamous for it's adverse heat/humidity effects on turf. However, improvement in turf quality may be gained by isolating each deliterious factor and solving them individually as time and money permit.

The soil compaction problem is obviously reduced by aeration and in this case the greater the frequency the better. As a minimum, I would suggest at least twice in the fall; once soon after Labor Day and another just prior to the ground freezing. With the early aeration the plugs may be removed if they are unsightly or if rain would turn them to mud. If your budget and manpower permit, remove the plugs from those most trafficked areas and topdress heavily with sand. With the late aerification just try to get the holes as big and deep as possible so they become reservoirs for water that may aid the freezing, thawing, and heaving processes of winter. This natural process does much to relieve compacted areas and should be encouraged. Sand topdressings at any period when the turf is actively growing is recommended.

Surface and subsurface drainage may be important because you have little control over when people use the park or campgrounds, and their use when soils are too wet may contribute to the compacted rootzones. Consult with your local soil conservation service representative for the best spacing and depth of tile for your given soils.

The mechanical damage to the turf is difficult to control but may be reduced by keeping wheel traffic to an absolute minumim, provide paths or walkways in congested areas, and mowing turf

BOWIE HYDRO-MULCHER

Dollar for Dollar —
Where quality, performance, and durability count — you can't beat a Bowie

The revolutionary machine for the turf industry that seeds or sprigs, fertilizes, waters, sprays and mulches in one easy operation.

The *BOWIE HYDRO-MULCHER* performance is unequaled. Its capability has created a totally new method of lawn, turf and ground cover application, plus faster, more effective erosion control.

VICTOR 800

EXCLUSIVE BOWIE HYDRO-MULCHER FEATURES:

- Only proven unit for both sprigging and seeding with cellulose fiber mulches.
- Equipped with enclosed shredder bar for shredding full bales of cellulose fibers.
- Centralized tower control with no hoses.
- Equipped with triple agitators for faster mixing and eliminating sediment build-up.
- Uses pump only for spraying, so pump lasts longer.
- Slurry passes through pump only once, thus reducing seed damage and clogging.

If you need a dependable mulcher, then you need
THE BOWIE HYDRO-MULCHER.
Call or write for complete details.

HYDRO BOWIE MULCHER

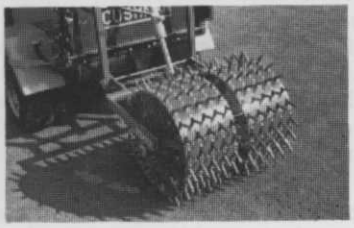
BOWIE INDUSTRIES, INC. / P.O. BOX 931 / BOWIE, TEXAS 76230 / (817) 872-2286

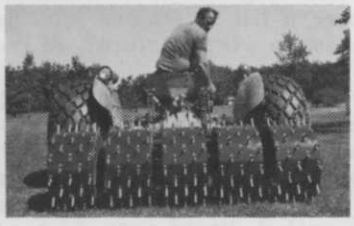
Circle **163** on free information card

You Get Much More With Dedoes!

SEE A DEDOES DEMONSTRATION BEFORE YOU DECIDE ON AN AERATOR.

Besides Picking up the Plugs, You Get Fast Aeration and Low Maintenance.





Plus!

1. TCA 551 offers close to 2" spacing between holes.
2. We offer a wide 5-drum unit with 6' swatch.
3. Mounts quickly to most any vehicle.
4. Operates forward and backwards.
5. Fast, positive hydraulic up and down action.
6. Hinged tine principal gives you round, clean holes.

So Why Limit Yourself?

Dedoes Industries, Inc.

1060 W. Maple Road West, Walled Lake, Michigan 48088 (313) 624-7710

NEW! 48"

KEES HEAVY-DUTY

POWERMOW

Model 481100

For large residential and commercial grounds use.

CHECK THESE PERFORMANCE FEATURES:

■ Powerful 11 h.p. Briggs & Stratton synchro-balanced engine ■ Fingertip clutch, brake and power turning control levers on each handle ■ Sleek deck design and drum wheel brakes for positive, close quarter mowing ■ Unique V-flanged front deflectors help prevent damage to yard decorations, monuments, etc. ■ Baffled design for clean and safe grass discharge. OPTIONS: Riding sulky and metal grass catcher.

For more information, write P.O. Box 923 or phone (402) 223-2391.

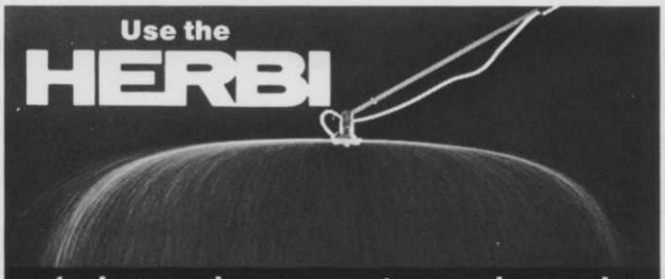
Since 1874

F. D. KEES MFG. CO. Beatrice, Nebr. 68310

Circle **154** on free information card

Use the

HERBI



for better, cheaper, easier weed control along fences, roadways, irrigation ditches, around buildings and structures.

The HERBI gives Controlled Droplet Application . . . a revolutionary approach to the application of herbicides. Its spinning disc produces a consistent 250 micron droplet, meaning ultra low volume spraying, eliminating the need for high volumes of water. Gives exact and thorough coverage, with less chemical. Startlingly economical in cost and use.

HERBI™

Micron West, Inc.

8582 Katy Freeway Houston, Texas 77024 (713) 932-1405

Circle **152** on free information card

Proscape *from page 72*

between 2" - 3" high. The mowing height and frequency are much dependent upon the turfgrass used. Traditionally, tall fescues have been recommended for heavy wear areas, but they tiller only weakly and hence have little ability to spread or repair damaged areas. Try using some of the finebladed ryegrass which may be less wear-resistent but tiller better. However, some cultivars do not perform well in high heat/humidity microclimates so consult with your area extension agronomist or a reputable seed dealer for the best selection. Actually, I would suggest that you acquire small quantities of different ryegrass seed and make your own little test plots in a place that would be subjected to wear and compare them to a tall fescue checkplot. When you reseed, you should cut in the new seed using a Rogers type seeder and go in two directions if possible. However be careful not to build up a monoculture of only cultivar and lose the benefits of a blend of slightly different genetic materials.

Another turf management technique that should be used concurrently with the fall aerifications is fall fertilization. If you only fertilize once a year, do it in October with a couple of pounds of nitrogen in a 1-1-1 to 3-1-2 ratio fertilizer. This encourages root growth in the late fall after aerification and early spring before the soils become compacted. If you fertilize twice a year, consider doing it after your aerifications. Keep spring fertilization to a minimum for you may be encouraging rapid, succulent growth that further reduces its wear resistence and requires more mowing and hence, more mechanical damage.

All these suggestions require time and money which may be in short supply. Perhaps you can use this answer and other such materials to persuade those so empowered to increase your budget if they want better turf.

Q: *My husband and I have been doing landscaping for five years and now he would like to go back to school and get his degree in Landscape Architecture. Is there a list of schools offering programs in Landscape Architecture? M.W., Austin, TX*

A: Because many universities are constantly modifying or diversifying educational programs, lists of offerings change quickly and hence no list may be comprehensive. However, recently the American Society of Landscape Architects published a list called "1978-1979 List of Accredited Programs in Landscape Architecture" and is available by writing to A.S.L.A., 1900 "M" Street N.W., Suite 750, Washington D.C. 20036, Attention — Director of Education and Research. Although this lists approximately forty institutions with full programs, there are many other schools that offer individual courses related to L.A. but no degree. So check with colleges and universities in your area for specific offerings. **WTT**

For ad on following page circle **135** on free information card ▸

MAIL COUPON FOR INFORMATION OR FREE DEMONSTRATION

Watch a VP12 install sprinkler pipe

...no-ditch installation is quick and clean.

Why dig trenches and leave scars when you install a sprinkler system?

It makes sense to keep it neat. And it's easier. A Ditch Witch VP12 vibratory plow gently tucks pipe under the turf. Eliminates hundreds of feet of raw earth trench on a typical job. For complete information or a free demonstration mail the coupon or call Toll Free (800) 654-6481.

☐ Send a free brochure on installing sprinkler systems with the VP12.

☐ Arrange a no-obligation, free demonstration.

Mail to Charles Machine Works, Inc., P.O. Box 66, Perry, Oklahoma 73077

Name _____

Company _____

Address _____ Telephone AC/ _____

City _____ State _____ Zip _____

DITCH WITCH®

12/WTT

DITCH WITCH® HAS THE ANSWER!

J-M BUCKNER® INTRODUCES WATERSCAPING.

A new concept of total irrigation capability to help you keep things green.

Ever since the first ditch was dug to bring water to thirsty vegetation, new and better ways to irrigate the land have continually been developed. Johns-Manville Buckner takes the next step ... Waterscaping. It's more than controllers, valves and sprinklers that simply move water. It's the total scope of irrigation ... from research on water distribution and component design to quality products and systems that perform reliably and efficiently. That's the way they've been designed.

Why We Call It Waterscaping.

With increasingly elaborate landscape designs, many more different kinds of vegetation to be watered and constant changes in the weather, both daily and seasonally, it becomes more apparent that irrigation is no longer a mechanical function. It has become an art and a science. Buckner Irrigation Systems is keeping up with you by providing the research, the products and the service through our distributors to help you do a better job.

Behind It All: Experience, Research and Testing.

At our computerized testing facility in Fresno, we constantly research, test and refine all the parts of Buckner systems. The purpose is twofold. First, to develop irrigation components that will perform efficiently within predetermined tolerances. The second purpose of our testing program is to insure you that the products you get will work according to our published performance data. The components we test come directly off the assembly line and all Buckner products are performance rated.

Precision Controllers With Unmatched Flexibility.

J-M Buckner is first in the industry to offer you solid-state microelectronics in an irrigation controller. Our KCS line of controllers are as easy to operate as pocket calculators. KCS offers unmatched flexibility with 12 or 24 individual circuits and four 14-day schedules ... all with timing accuracy down to a fraction of a second. The KCS totals daily watering time, allows skipping up to nine days, has both automatic and manual syringe cycles for services such as dew removal and many more unique features. Operation is simple, fast and accurate.

A Clog-Resistant Valve That Handles Any Flow Rate.

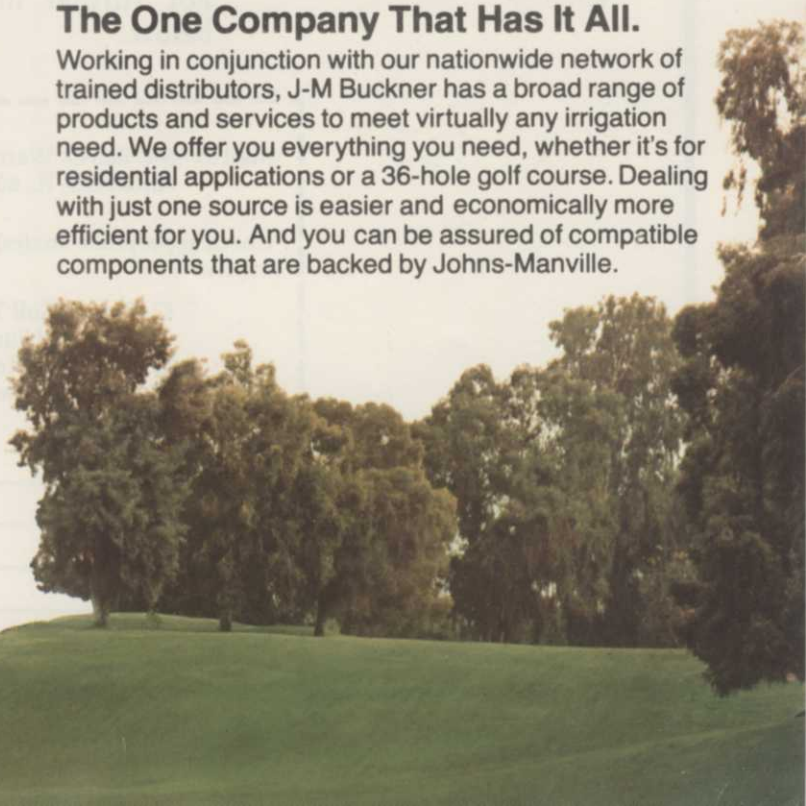
The J-M Buckner 930 Electric Valve. A new three-way solenoid eliminates continuous internal flow through tiny orifices and greatly reduces the chance of clogging. This also allows "dirty water" to pass through the valve without fouling the operation. One particularly important feature is that there is no minimum flow restriction. The valve will operate efficiently and open fully under all flow conditions.

Heads That Perform to the Specs.

Because of the design and construction of our full line of sprinkler heads and our extensive testing and quality control program, J-M Buckner heads will put out the amounts of water to the degree and configuration specified in our published technical data. Practically speaking, it means you can design our sprinkler into your system and be confident of a high level of performance in dispersing water when and where you need it.

The One Company That Has It All.

Working in conjunction with our nationwide network of trained distributors, J-M Buckner has a broad range of products and services to meet virtually any irrigation need. We offer you everything you need, whether it's for residential applications or a 36-hole golf course. Dealing with just one source is easier and economically more efficient for you. And you can be assured of compatible components that are backed by Johns-Manville.



To learn more about Waterscaping (technical information, planning assistance or quality irrigation system components), contact your J-M Buckner Distributor or Vince Nolletti, P.O. Box 232, Fresno, CA 93708, (209) 442-8511.

Circle **177** on free information card

Johns-Manville

The Musser Foundation . . . An Investment in the Future

THE MUSSER INTERNATIONAL TURFGRASS FOUNDATION

of the H. B. Musser Turfgrass Fellowship, Inc.

We are a non-profit, tax-exempt, charitable and educational, IRS approved corporation. We are building a fund that perpetually will create income which will be used through graduate fellowships to train and educate leaders in the turfgrass field who will fill vacancies created when our active scientists retire. For some of our top leaders that time is NOW! Fellowships involve closely supervised original basic research at a recognized experiment station and the writing of a learned thesis.

Our officers, directors and advisers are qualified to offer assistance in several categories:

Benefit Tournaments can be structured to help state experiment station research as well as MITF.

Memorial Funds honor the dead with a Living Fund that supports higher education in turfgrass forever. Several currently are in existence.

Trusts can be developed by our specialists to benefit both the donor and MITF.

Contributions always are welcome in any amount. Donations will be gratefully acknowledged and the donor's name will be permanently inscribed on the Fellowship rolls.

For further information please fill out the coupon below.

Mail to: Mr. Ben O. Warren, Treasurer, 8400 W. 111th St., Palos Hills, IL. 60465.

Check appropriate box(es) and a brochure will be sent with further information.

- ☐ Benefit Golf Tournaments
- ☐ Memorial Funds
- ☐ Charitable Remainder Trusts
- ☐ Contributions: ( ) $1,000; ( ) $500; ( ) $250; ( ) $100; ( )

Name _____

Club or Organization _____

Address _____

City _____ State and Zip Code _____

Telephone _____

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Question: *I would like to hear an expert's true opinion on the use of tree spikes (gaffs) for climbing and its effects on the tree.*

Answer: We do not recommend the use of gaffs or any other practice that unnecessarily disrupts the protective bark layer.

Recent evidence has shown that trees respond chemically and structurally to a wound and compartmentalize or "wall off" the area around the wound. Some species are highly effective at containing invading microorganisms that lead to internal decay, while others display a weak wound response.

I would suggest that you contact Dr. Alex Shigo for more detailed information on wound research. His address is: USDA Forest Service, Northeastern Forest Experiment Station, Durham, New Hampshire 03824.

Question: *Will two inches of topsoil and a layer of sod cause any serious damage to a pure stand of Norway pine (Pinus resinosa)?*

Answer: I do not have any specific information for *Pinus resinosa*, but we have records of as little as one inch of fill soil causing the decline of other species.

Of course, some species will tolerate fill over the root system better than others, but, in most cases, the roots of established trees will be injured by any change in grade.

Trees which have had fill placed over the root system should be watched carefully for at least ten years. Thinning and fertilization will help reestablish the equilibrium between the roots and shoot (stem and foliage) of affected trees.

Question: *What can be done to control verticillium in maple trees? My maples are dying.*

Answer: Several researchers are testing materials for chemical control or suppression of verticillium wilt. Dr. Peter Rice of The Royal Botanic Garden in Ontario has had encouraging results with Lignasan BLP. However, the treatments with Lignasan and with the other chemicals currently being tested are still experimental and are not recommended for commercial use.

The standard recommendation is good cultural practices to minimize the severity of the verticillium infection.

MODEL 1M — The safest, easiest to use manually operated earth drill on the market

Half the labor cost . . . no torque kick-back . . . drills right up against walls and fences. 5 hp engine, safety clutch, 3-position handle bars. Tows at high speed.

2" to 12" interchangeable augers. Standard or Pengo boring heads.

1 MAN EARTH DRILL

3, 5 and 8 horsepower . . . ample for any type of soil
Models C-71, C-71,5 and 82

Lightweight and virtually maintenance free, these dependable earth drills feature heavy duty gear box and safe automatic clutch. Handle bars detach for close-up drilling and easy portability.

4" to 12" augers with changeable blades and fishtail pilots.

2 MAN EARTH DRILL

For Further Information Write or Call . . .

GROUND HOG INC.

P.O. Box 290 • San Bernardino, Calif. 92402 • (714) 888-2818

Circle **140** on free information card

Flail Safety

Cut your grass and cut your risks with Mott flail safe mowers. Lightweight, free-swinging flail knives yield when striking objects, reducing the force of impact. Their vertical mode of operation, the guard action of the roller, and the deflecting features of the cutter housing all combine to make Mott mowers safer.

Cutting widths from 38 to 88 inches and gangs to 19 feet. Mott mowers have Long Life Durability and for you that means Best Value Purchase.

MOTT CORPORATION
514 Shawmut, La Grange, Illinois 60525. (312) 354-7220
The Original Flail Safe Mowing System

Circle **112** on free information card

Hypro sprayer pumps

Choose from a wide range of pump designs and materials to suit your requirements: cast-iron, Ni-Resist and bronze pump housings... even nickel plating on piston pumps.

PISTON PUMPS

Series 5200 Big Twin
10 gpm output at 400 psi with 6 hp engine

Series 5400 4-Cylinder
25 gpm output at 600 psi

ROLLER PUMPS

Choice of nylon, polypropylene or rubber rollers.

Series 6500
7.6 gpm at 100 psi
6 gpm at 200 psi
4 hp gas engine
Other models up to 44 gpm at 50 psi.

CENTRIFUGAL PUMPS

Series 9200.
Output to 124 gpm.
Pressures to 70 psi.
Speed of 4200 rpm.

Send for your FREE Sprayer Pump Handbook

Hypro
A DIVISION OF LEAR SIEGLER, INC.
347 Fifth Ave NW, St. Paul, MN 55112 • (612)633-9300

Circle **148** on free information card

PRODUCTS

The Little Dude model GF-330, a self-propelled, small acreage traveler has been added to Consolidated Pipe and Tube Company's line of irrigation sprinklers. The unit operates on a similar concept as a traveling lawn sprinkler, but throws a stream of water as far as 300 feet in diameter.

The unit pulls 330 feet of hose, giving it a range of ⅛ mile, and can irrigate up to three acres per setting.

The force of the water activates a winch attached to an anchored cable to propel the unit on a straight path across a field. By shifting gears, the unit can vary the speed to apply ½ to 1½ inches of water. It has its own hose reel.

Circle 712 on free information card

Wire Baskets for balling rtrees are available in sizes from 18 to 40 in. from Kerr Wire Products Co. The baskets are designed to fit the taper of the Vermeer Tree Harvester. Looped uprights improve ease and speed of finishing and provide improved protection for top and bottom. The baskets lead to better production rates, better ball holding capability (especially in sandy or dry soil) and uniformity of package.

Circle 716 on free information card.

SUPER D WEEDONE® APPLIED BY METER-MISER

Only way to total lawn weed control!

Super-D is the formulation that's right for you with broader coverage for your dollar and a broad range of weeds under control.

AMCHEM®
AMCHEM PRODUCTS, INC.
Subsidiary of Union Carbide Corporation
Ambler, Pennsylvania 19002

Circle **170** on free information card

Technical and Instructional Books

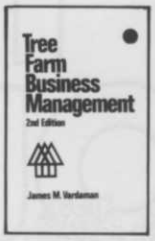
TREE SURGERY
Tree Surgery, A Complete Guide, gives an up-to-date account of modern tree surgery operations. The theory behind acquiring the skills and knowledge necessary to perform competent tree surgery is outlined clearly and precisely.
$15.00

DISEASES OF TURFGRASSES
Couch's Diseases of Turfgrasses is one of the best references on that subject to date. No turf library is complete without it. It provides an in-depth analysis of turfgrass disease causal organisms and control of them. From diseases caused by pathenogenic plants to viral turf diseases, Couch presents information necessary for any plantsman to achieve fine turf.
$24.50

WOODY LANDSCAPE PLANTS
Manual of Woody Landscape Plants is a valuable reference for anyone interested in woody plants. The book provides concise, factual information on common and not-so-common woody ornamentals, ground covers and vines as well as the narrowleaf and broadleaf evergreens which are adapted to Midwestern and Eastern climates.
$19.00

TREE MAINTENANCE
Tree Maintenance is an indispensible guide to anyone involved with the care and treatment of trees. All phases of tree care are described in non-technical language. The book includes a comprehensive list of effective and safe pesticides for trees.
$25.00

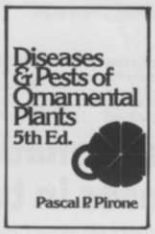
GUIDE TO TREES
Simon & Schuster's Guide to Trees provides beginner and expert with a reference to 300 trees. Black and white line drawings and 350 color photographs accompany descriptive text on each tree, including etymology, habitat, description, propagation, and conditions for growth.
$17.00



TREE FARM BUSINESS MANAGEMENT
Tree Farm Business Management covers all phases of a tree farming operation, from obtaining an accurate timber inventory to timing sales for profitable results. Budgeting, preparing scientific financial forecasts, special tax problems, and other financial matters are given thorough coverage.
$16.00

DISEASES OF SHADE TREES
Diseases of Shade Trees is an excellent introduction to tree diseases, including infectious and noninfectious. Part III, Special Topics, covers nonpathogenic conditions, disease diagnosis and living hazard-trees. The book describes the theory and practice behind maintaining a healthy tree that serves a positive purpose.
$22.00

SOIL MICROBIOLOGY
The second edition of Soil Microbiology integrates microbiology, soil science, and biochemistry to characterize soil microflora. The revised edition adds a closer scrutiny of environmental problems, information on soil toxicants formed by microorganisms, and a chapter on microbial metabolism of pesticides.
$19.50



DISEASES & PESTS OF ORNAMENTAL PLANTS
Diseases & Pests of Ornamental Plants, fifth edition, includes new ornamental disease hosts, identifies new diseases, and describes the spread of known diseases to a wider range of host plants. The book keynotes environmental factors adverse to the health of 500 ornamentals.
$19.00

Weeds Trees & Turf
Books Dept./Fran Franzak
9800 Detroit Ave.
Cleveland, OH 44102

Name _____
Company _____
Address _____
City _____ State _____ Zip _____

Quantity	Title	Unit Price	Total
_____	**Guide to Trees**	**$17.00**	_____
_____	**Soil Microbiology**	**$19.50**	_____
_____	**Diseases & Pests of Ornamental Plants**	**$19.00**	_____
_____	**Tree Surgery**	**$15.00**	_____
_____	**Tree Farm Business Management**	**$16.00**	_____
_____	**Tree Maintenance**	**$25.00**	_____
_____	**Diseases of Shade Trees**	**$22.00**	_____
_____	**Manual of Woody Landscape Plants**	**$19.00**	_____
_____	**Diseases of Turfgrasses**	**$24.50**	_____
		Total	_____
		Shipping & Handling Chg. (1.00 per book)	_____
		Total Payment Enclosed	_____

AW, CUT IT OUT

Terraclor for Rhizoctonia Control	Southern Pine Seedlings — Rhizoctonia Needle Blight	Camellias — Flower Blight	Azaleas — Petal Blight	Bedding Plants — Stem Rot	Bulbs — Crown Rot, Black Rot	Easter Lilies — Root Rot	Roses — Botrytis Storage Rot	Lawn Grasses — Brown Patch
Terrazole for Pythium Control		Herbaceous and Woody Plants — Pythium-caused Rot, Damping-off		Bedding Plants — Pythium-caused Stem Rot, Damping-off	Lawns — Cottony Blight, Grease Spot, Damping-off		Tropical Foliage Plants — Pythium-caused Stem Rot, Damping-off	

For more information on how to cut out fungi diseases in turf and ornamentals.

Your turf and ornamentals need moisture to survive. However, wet weather brings out the worst in your soil. Fungi diseases like damping-off, blight and rot. Diseases that can stunt or weaken your plants.

Terraclor® and Terrazole® soil fungicides protect the value and beauty of your turf and ornamentals. Give you healthier, stronger plants, that are more beautiful.

Get Terraclor or Terrazole from your local chemical supplier. For more information cut out and mail the coupon.

Terraclor, Agricultural Department Olin
P. O. Box 991, Little Rock, Arkansas 72203

Name _____

Address _____

City _____

State _____ Zip _____

Please send information on turf and ornamental disease control.

Caution: Read and follow label directions carefully.

Terraclor®
soil fungicide

Olin

Circle **164** on free information card

WT&T PRODUCTS

The new Pringle Cascade Reel Irrigator is a compact, highly portable traveling sprinkler system consisting of a 4-wheeled tube cart and reel, a 3-wheeled gun cart and sprinkler gun, a water-powered, partial-flow turbine drive system, and varying lengths and sizes of rugged polyethylene tubing.

The Cascade requires no cables, winches or travel lanes. It is towed to the field and connected to a water source. The gun cart is towed into the field with as much cable as needed. Once in the field, operation is completely automatic. The turbine-powered reel slowly rewinds the tubing and draws the gun towards it.

A shock-absorber system that controls the speed of shut off as the gun reaches the chassis controls the speed of shut-off, avoiding sudden shock to the pressure system.

There are six models available for specific irrigation applications, including diesel-powered Models 110EC and 125 ED, which can be used to pump from an irrigation ditch or to boost low pressure as required. Diesel drive models can also be used to dispose of liquid wastes containing solid materials.

The models include hose diameters of three to four and one-eighth inches and lengths of 700 to 1250 feet.

Circle 701 on free information card

Can-Fan by Aquatic Irrigation Systems, Inc., is a trickle irrigation

For ad on following page circle **155** on free information card

SWINGER®

Swinger is a natural for landscaping. Its 80 degree articulated steering allows you to maneuver in tight quarters without tearing up the surface. There's no skidding. Swinger features: simple hand and foot controls; 4-wheel hydrostatic drive; front-rear frame oscillation; water cooled engines; towability. Choice of three models with 1/3, 2/3 and 1 yard capacities. Contact Dynamic Industries, Inc., Box 466, Barnesville, Minnesota 56514.

Call Toll Free

1/800/346-4858

In Minnesota, Call (218) 354-2211

Diazinon is labeled for
How many will you

Diazinon® not only controls, but is labeled for more turf insects than any other turf insecticide.

Just take a look, it's the biggest label in the business.

You'll count 24 turf insects in all. Including white grubs, sod webworms, cutworms, chinch bugs,

© 1978 Ciba-Geigy Corporation

every insect on this page. face this season?

armyworms and ants.

This season, be sure to ask your local supplier for Diazinon.

And put the biggest label in the business to work for you.

Ciba-Geigy, Ag. Div., Box 11422, Greensboro, NC 27409

Diazinon by CIBA-GEIGY
The biggest label in the business.

CIBA–GEIGY

ALMOST MAINTENANCE FREE
TallhedGe™

Here is the ideal solution for hedges and screens. TALLHEDGE™ grows fast and thick with minimum care. It matures into upright four-foot wide columns, twelve feet high with lustrous dark green leaves. If desired it can be shaped into a formal hedge. During the summer months attractive berries add color.

Ask for the true "cutting-grown" TALLHEDGE™ Excellent for all types of landscape screening, property line separations and backgrounds. There is only one TALLHEDGE™ . . . from the Originators, American Garden Cole.

AMERICAN GARDEN cole
30627 Orr Road/Circleville, Ohio 43113
Phone 614-477-1671

Where great new plant ideas take root.

Circle **126** on free information card

NEW 150 GAL. TURF TRAILER SPRAYERS

2000 SERIES
COMMERCIAL SPRAYERS

Tongue and axle standard on 150 gal. 2000 series unit. Four flotation turf tires minimize compaction. Choice of 3 pumping systems, spray booms to 21 ft. with spray gun and hose units available.

These are the compact, self-contained applicators for all types of spraying. Simple to operate and service. The 2000 Series sprayer trailers easily behind turf vehicles.

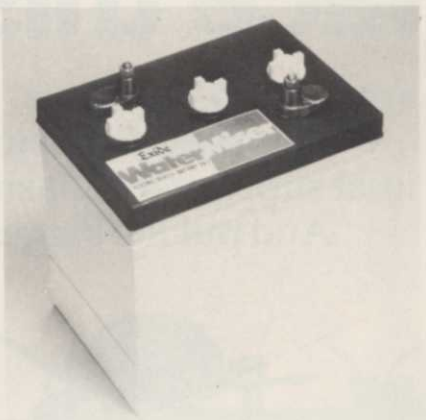
Dakota City, Nebr. 68731 • 402-987-3412

THE Broyhill COMPANY
DAKOTA CITY, NEBRASKA, U.S.A.

Circle **141** on free information card

emitter for use in nursery containers, landscaping and orchards. Water is dispersed in a uniform fan-shaped spray at rates ranging from .06 to .1 gallons per hour at 5 PSI. Water is supplied to the Can-Fan through 3/16 in. PVC tubing.

Circle 702 on free information card



A golf car battery that will significantly cut costs of maintenance has been announced by ESB Incorporated Automotive Division.

The Exide Water Miser is specifically designed to go six months without the addition of water in most climates, under normal use and proper charging procedures. After the initial six-month period, water will be required only occasionally.

Because of infrequent fillings, problems which can shorten the battery's effective service life such as over-filling, under-filling, and uneven filling can be avoided.

The Exide Water Miser (EV-1) is a 6-volt, group size GC-2 battery, for usage on golf courses all over the country.

Circle 703 on free information card

A new ⅜-mile Traveling Irrigation System has been introduced by Hydro Engineering. The redesigned traveler features 7/16-inch aircraft cable, double cable reel gear boxes, and has a side-by-side hose reel that accommodates 990 feet of mobile hose.

◀ For ad on preceding page circle **150** on free information card

ECONOMY

IF YOU BOUGHT ANOTHER MOWER YOU PROBABLY PAID TOO MUCH

- **ECONOMICAL TO ACQUIRE** Low costs can be easily returned by the Brouwer's excellent cutting efficiency and low maintenance costs.
- **ECONOMICAL TO MAINTAIN** Simple, mechanical, positive drive design eliminates heavy wheels, gears boxes and hydraulics and the use of easily available standard parts greatly reduces downtime and repair costs.
- **ECONOMICAL TO OPERATE** Requires only 24 - 30 H.P. tractors consuming less fuel.
- **TRANSPORTABILITY** Easily towed from one area to another by any type of vehicle. High clearance in transport position allows mower to mount curbs and other obstacles.
- **VERSATILITY** This mower's lightweight and P.T.O. drive enables efficient operation in a great variety of wet and dry conditions and grasses up to 10" in length. Available in 3, 5, 7 gangs, 4, 5, 6 bladed reels.

FIND OUT HOW WE CAN SAVE YOU MONEY. CALL OR WRITE US TODAY.

BROUWER

TURF EQUIPMENT LIMITED

THE ULTIMATE IN RELIABILITY, VERSATILITY & ECONOMY

Manufacturer: Woodbine Avenue, Keswick, Ontario, Canada L4P 3E9 Telephone (416) 476-4311

See us at the G.C.S.A.A. Show in Atlanta.

Get into the Misting Act... with SOLO

Sit down on SOLO's new Model 426R Mist Blower. This 12.5-hp self-propelled unit is a great performer for the vegetable, fruit, berry, flower, and ornamental tree grower. In fact, it's the best deal in any moderate-sized row-crop or hillside application.

The amazingly compact and versatile 426 will save you time and cash when you're applying insecticides, fungicides, or herbicides.

- Provides ideal coverage and saves through high-concentration, low-volume application
- Famous SOLO engine . . . a powerhouse!
- Economical discharge through 8 nozzles, adjustable in flow rate and direction
- Add TELEBLAST nozzle-up to 50-ft coverage in any direction
- 2 forward speeds (up to 3 mph); 2 reverse
- Choice of standard cleat or ATV tires
- Lightweight; low ground compaction; keeps going in wet soil

Send for free brochure or ask your dealer for SOLO

TRAC-419

Model 451/452 PTO Mist Blower; lightweight; 3-pt hitch to 15-hp or over tractor; 53-105-gal. formula tank

TRAC-419 Mist Blower; self-contained module; mountable on truck bed, trailer, jeep, small tractor; 12.5-hp engine; adaptable to any size formula tank or tanker

Also: Manual or motorized backpack units.

451/452

SOLO INCORPORATED
Box 5030
Newport News, VA 23605
In Canada, Box 464
Burlington, Ont. L7R 3Y3

DEALERSHIPS AVAILABLE IN CERTAIN AREAS

SOLO

Circle **137** on free information card

FOR TABLE TOP SURFACES AND UNIFORM SEEDBEDS, SOD GROWERS NEED AN EVERSMAN PLANE

Designed for Maximum Production and Maneuverability

Smooth, level fields permit even seeding, uniform germination and precision harvesting on sod fields. And smooth fields are easy on all other equipment, thus reducing unnecessary wear.

Prepare seedbeds fast, then fold the wings hydraulically for transport to the next field.

Available in two sizes, 24' or 16' width, with tremendous production capacity.

For free information, write or call.

Eversman
MANUFACTURING CO.
Dept. P10, Box 4345
Denver, Colorado 80204
(303) 572-1140

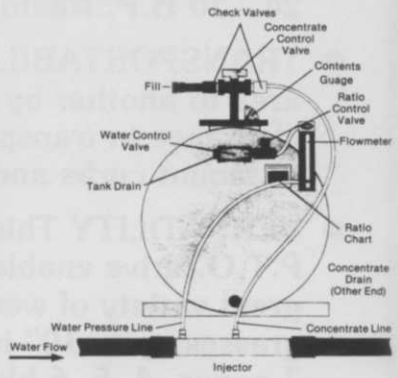
Circle **117** on free information card

The hose is operated with a new planetary gear arrangement, new hose guide, and hose windrower that allows the operator to lay hose outside the wheels. Operator controls have been re-located and the engine and cable reel are covered by a fiberglass hood.

The fuel and oil hydraulic tanks are larger than on other models and have also been relocated.

Hydro Engineering also make a standard Traveler and an electric-start, Diesel-powered model.

Circle 704 on free information card



Mixer-Proportioner injects concentrated fertilizers of chemicals into irrigation systems providing uniformity of application. The MP-60 from Young Industries requires no external power, has no moving parts and does not restrict flow. The unit consists of a plastic lined tank which holds up to 60 gallons of liquid concentrate.

Circle 705 on free information card

Bulkitank is molded polyethylene containers on a dolly capable of carrying 15 cu. ft. or 1,000 lbs. of material easily and neatly. The KT-11 by Plastech dumps and cleans easily and is available with either high or low dolly and lid. Dimensions are 54 x 30 x 35 in. The containers and lids stack when not in use. The Bulkitank is an alternative to the wheel barrow, especially for interior uses.

Circle 706 on free information card

ARBOTECT® 20-S
The strongest Dutch elm disease protection you can give a tree.

ARBOTECT 20-S fungicide helps make it possible to save many elm trees that otherwise would be lost.

Injected into the trunk of the tree, ARBOTECT builds a barrier against Dutch elm disease inside the tree itself. It helps prevent the disease in healthy elms, and can often save infected trees if they are treated early enough.

Used along with sanitation, insect control, and root graft elimination, ARBOTECT can significantly improve the effectiveness of a Dutch elm disease control program.

ARBOTECT differs from other elm fungicides in several important ways:

- It is registered at rates high enough to be effective.
- It is concentrated, requiring much less water for injection, so trees can be treated much faster.
- Thiabendazole, the unique active ingredient in ARBOTECT, is highly effective against *Ceratocystis ulmi,* the fungus that causes Dutch elm disease.
- Even though it is more effective and convenient, ARBOTECT costs about the same to use as other elm fungicides.

This year, put ARBOTECT to work in your disease control program. It's the strongest protection you can give an elm against Dutch elm disease.

Arbotect
Strong protection for elms.

MERCK

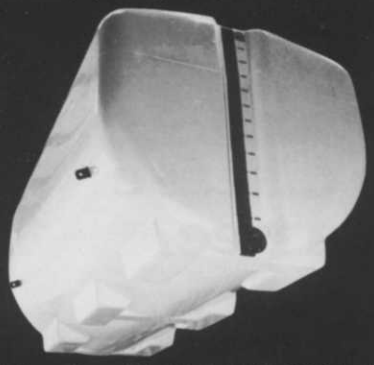
Agricultural Products
Merck & Co., Inc. P.O. Box 2000
Rahway, New Jersey 07065
ARBOTECT (thiabendazole) is a registered trademark of Merck & Co., Inc.

Circle **106** on free information card

LASTS A LIFETIME
Tuflex MFG.CO.
FIBERGLASS PRODUCTS

WHEN THERE'S NO SUBSTITUTE FOR THE BEST!

Model #PC 1200 fiberglass tank equipped with fiberglass pump cover, Model #D 200 gallon mixing tank shown mounted on a custom truck body by Strong Enterprises.



Bottom view of the Model #PC 1200 tank showing to best advantage the integral molded mounting base and steel hold-down lugs designed for ease in mounting on your truck and eliminating costly installation.

THE Tuflex Manufacturing process allows a five year warranty on all tanks.

Tuflex is the only manufacturer to specialize in *seamless* fiberglass spray tanks specifically for the pest control and lawn care industry. Remember when craftsmanship was an art... at Tuflex it still is! The exclusive Tuflex process carries a full five year warranty on all handcrafted seamless fiberglass tanks.

For economy prices and more information on our complete line of tanks, write or call now:

Tuflex Manufacturing Company
Post Office Box 13143
Port Everglades, Florida 33316
(305) 525-8815

Circle **128** on free information card

WT&T CLASSIFIEDS

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 65¢ per word. Box number, $1. All classified ads must be received by Publisher the 5th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

2 — 50' AERIAL BASKETS, brush chipper, stump cutter, 2 sprayers, small crane. Parkway Tree Service, 12026 West Cherry St., Wauwatosa, Wisconsin 53226. 414 257-1555.

LAWN SPRAY TANKER. 1 — 1977, excellent condition 1500 gallon Loadstar International, completely equipped with hose reels and 300 ft. of delivery hose. Phone 313 549-1912.

LAWN CARE COMBINES, rolls, aerates, dispenses 4 granular materials, 1 liquid, all simutaneously, towed behind tractor, 4 machines, excellent condition. $650.00 and up. Richard Ramadon, P.O. Box B, Orange, Conn. 06477. 203 795-9306.

STUMP GRINDERS, chippers, log splitters, sprayers, bucket trucks, all reconditioned. Let us know your needs. Essco, 5620 Old Sunrise Hwy., Massapequa, N.Y. 11758. 516 799-7619.

LANDLEVELER — Eversman model 329, $1500.00, 12 ft. IH disc. No. 45, $1500.00. Green Acres Turf Farm. 1 517 676-2362.

WILL TRADE new Toro Rake-O-Vac thatching reel for Toro flex tip reel. 1 513 424-2052.

EXCEL HUSTLERS with mower, 8 to choose from, will deliver, 313 329-2675.

USED 1,000 gallon John Bean tank, Mitts & Merrill chipper, call 216 793-2704.

SEEDS

SOD QUALITY Seeds: Adelphi, Glade, Cheri, Nugget, Merion, Fylking, Majestic, Baron & Touchdown bluegrasses, also fine fescues. Manhattan ryegrass. Custom mixing available. Michigan State Seed, Grand Ledge, Michigan 48837. Phone 517 627-2164.

HELP WANTED

OUR EXPANDING OPERATION enables us to offer several excellent opportunities for highly qualified experienced individuals in the following areas: 1) Landscape Design/Sales; Responsibilities include: negotiating with architects, developers and contractors to secure landscape construction contracts; estimating and bidding; site-design; scheduling and supervision of 3 to 5 crews; and complete coordination of landscape construction projects. Successful applicant will have a Bachelors Degree in Landscape Architecture and 1 to 2 years experience or the equivalent in experience. — 2) Landscape Foremen; responsibilities include: proper installation of plant material and landscape features including grading; correct use and care of equipment; and supervision of crews. Successful applicants will have 1 to 3 years of experience in the landscaping industry with at least 1 year in a supervisory capacity and knowledge of reading blueprints. — 3) Landscape Maintenance Foreman; responsibilities include: proper care and maintenance of plant material (i.e. fertilizing procedures, spraying, mowing, pruning and cultivation); correct use and care of equipment; and supervision of crews. Successful applicants will have 1 to 3 years of experience in landscape maintenance with at least 1 year in a supervisory capacity. These are year-round positions with excellent starting salaries and full company benefits. If you feel you are qualified for one or more of these positions described above, and you are an ambitious, self-motivated, knowledgeable individual who enjoys a challenge and one who takes pride in his work, then you are what we are looking for. Please contact our office immediately. Bob's Green Thumb Landscaping Co., Inc., Rae Ann Borst, Secretary, RR 1, Box 131, Mundelein, Illinois 60060. (312) 634-9300.

GOLF COURSE TURF PRFESSIONALS: An opportunity to sell Pro Turf© products. ProTurf Division of O.M. Scott & Sons, the nation's leading manufacturer and marketer of professional turf products, has openings for Technical Representatives in several territories. The Tech Reps selected will call on golf course superintendents, requiring a knowledge of turf management and an understanding of these professionals' needs. Applicant should have a BS degree or equivalent in one of the agronomic sciences. Excellent starting salary plus bonus, automobile, and a comprehensive benefits program at no cost to employees go along with these positions. Send resume in confidence to Dick Stahl, Director of ProTurf, O.M. Scott & Sons, Marysville, Ohio 43040. An equal opportunity employer.

Continues on page 92

In a tight economy, it's right to insist on fertilizer that lasts longer and works harder. That's why Nitroform® slow-release nitrogen is right on the money for your turf budget.

The 38% nitrogen is released slowly and steadily to stretch time between applications. Nonleaching, it stays to feed. Nonburning, Nitroform can be applied with ease by any member of the crew.

Use Nitroform and give your members a golf course with lasting beauty. Use Nitroform and keep you and your crew looking good between applications.

You and your club members work hard for your money. Let Nitroform work hard and long for you. Order it today.

Choose Blue Chip® for spreading, or Powder Blue™ for liquid application.

WHEN MONEY'S TIGHT, NITROFORM® IS RIGHT.

For Quality Nitrogen
NITROFORM™

HERCULES INCORPORATED
Agricultural Chemicals, Wilmington, Delaware 19899 Phone (302) 575-5000

®Registered Trademark of Hercules Incorporated, ™ Trademark of Hercules Incorporated.

STH79-1

CLASSIFIEDS

HELP WANTED *from page 90*

REGIONAL LANDSCAPE MANAGER **for national company** to operate throughout Florida. Can be headquartered in Ft. Lauderdale area. Experience requirements: history of management of large community landscape facilities; degree in ornamental horticulture or horticultural management and/or equivalent education or on-job training; experience in creating maintenance procedures and schedules; experience in teaching and dealing with landscape crews; history of operating on independent basis and developing realistic schedules for independent action. Salary open. Please call Mr. Carpenter (305) 972-8530.

PROTECT NEWLY SEEDED AREAS FROM WIND AND WATER EROSION WITH TERRA TACK

Terra Tack used in any hydrograsser or hydroseeder provides erosion control for newly seeded areas or any other soil surface needing erosion protection. Terra Tack after application forms a water insoluble gelatinous crust, locking the seed and mulch to the soil. This invisible crust is, however, porous enough to permit moderate rainfall or irrigation water to soak into the soil, while excessive water runs off. Terra Tack also reduces soil moisture evaporation. When added in the same tank along with a slurry of water, seed, mulch, fertilizer or other compatible soil amendments, Terra Tack, in most cases, eliminates the need for two applications, separate equipment and extra manpower.

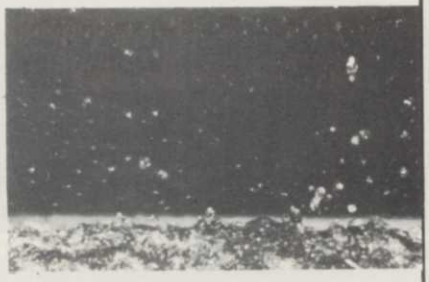
Versatile Terra Tack can be used with straw, hay or wood fiber mulch.

Straw or Hay Mulch

Terra Tack when applied as a direct spray to straw or hay mulch helps prevent wind and/or water displacement of the mulch and seed.

Wood Fiber Mulch

Terra Tack when combined with fiber mulch, seed and water acts as a complete binder helping to lock the protective mulch blanket to the soil.



Grass Growers

424 Cottage Place, Plainfield, NJ 07060

AGRICULTURALIST, HORTICULTURALIST/AGRONOMIST. Excellent opportunity to assume broad scope responsibilities for a major chemical lawn care company. Primary responsibility willinvolve research, training, and providing technical support to Branch management Personnel. successful candidate should have a Ph.D. in agriculture with specialization in agronomy and horticulture. Some experience in turf management or related fields. Salary commensurate with experience and job responsibilities. For confidential consideration, send resume and salary history to: Box 206, Weeds Trees and Turf, Box 6951, Cleveland, Ohio 44101.

FOR SALE

AERIAL BASKETS, digger-derricks, stump cutter, brush chipper and Prentice loader. 414 354-8730. Allied Enterprises, 9102 N. 75th St., Milwaukee, Wisc. 53223.

LONGMONT, COLORADO — Established, growing tree and lawn service company for sale. Asking $16,000.00 plus $25,000.00 for equipment and inventory. Business is growing with a 80% increase in gross over last year. Owner can no longer keep up with business and other interests. Terms Cash. Owner would consider working partner with cash to invest. Home phone 303 772-3417.

TREE TRIMMING AND REMOVAL SERVICE. Going business. Los Angeles area. Owner retiring. $45,000. Box 216, Weeds Trees and Turf, Box 6951, Cleveland, Ohio 44101.

PRENTICE TREE LOADERS NEW AND USED. Used equipment includes: Prentice "G" loaders (2), Prentice "F" loaders (4), Barko "60" loader (1), contact Madison Truck Equipment, Inc., 2410 South Stoughton Road, Madison, Wisconsin 53716. 608 222-5591.

NEW 10000 gallon Hanson fiberglass tank with baffle and mechanical agatation, mounted on a skid. Ideal setup for liquid spraying, $1,795.00. Birmingham Lawn Spraying Company, 20784 Osmus, Farmington, Michigan. Phone 313 478-7140.

LAWN SPRAYER — New generation automatic sprayer. Cuts spraying time by 75%. Sprays insecticides, herbicides, fungicides. Under $250.00. Free information. Yard Mate, P.O. Box 917, Arvada, Co. 80001.

PORTABLE MIST CONTROLS patented 1976. Excellent to propagate greenhouse cuttings. Sprouts turf seeds in record time. Exclusive "hardening off" adjustment. Aquamonitor, Box 327-W, Huntington, New York 11743.

Continues on page 94

Circle **146** on free information card

How Roundup® helped Jim Siegfried renovate this fairway in days, without closing it for one minute.

Take a good look at this good-looking fairway.

Last fall, Jim Siegfried found a way to clean it up, without tearing it up—at the height of his club's busy season. With Roundup® herbicide by Monsanto.

Jim is the Greens Superintendent at Losantiville Country Club, Cincinnati, where bermudagrass had become a serious problem on the 18th fairway. To control it, Jim applied Roundup once—while the weeds were still actively growing—right at the start of the Labor Day weekend.

"That's really 'prime time' here," Jim told us. "But after we applied Roundup, we kept the fairway in play the whole weekend, and after. The members played right over it, with no problem."

Since Roundup has no residual soil activity, and won't wash or leach out of treated areas to injure desirable plants, Jim simply took normal precautions against spray drift—and didn't worry about damaging desirable vegetation along the fairway.

Even better, he was able to reseed right into the dying bermudagrass only 7 days after applying Roundup—without loss of playing time or inconvenience to the membership.

Reinfestation won't be a big problem for Jim, either. He knows that Roundup destroyed the rhizomes of the treated weeds, helping prevent their regrowth.

Jim thinks he'll use Roundup again this year—and apparently some club members hope so, too. "As soon as they saw how good this fairway looks, some of the members started asking when I'm going to do the same for #10, where we have some more bermuda. I'll probably tackle that with Roundup this fall."

If controlling many tough emerged weeds and grasses is a problem for you, see your local Monsanto representative or chemical dealer soon for your supply of Roundup.

Roundup. It worked for Jim Siegfried. It can work for you.

Monsanto

There's never been a herbicide like this before.

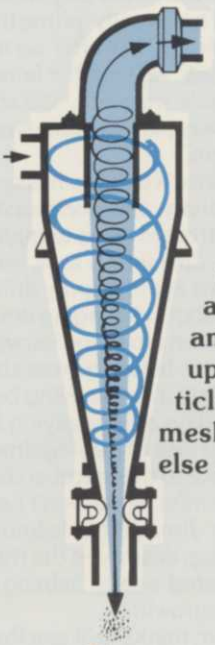
Circle **175** on free information card

ALWAYS READ AND FOLLOW THE LABEL DIRECTIONS FOR ROUNDUP.
Roundup® is a registered trademark of the Monsanto Company. © Monsanto Company, 1979.
For more information, contact Monsanto Agricultural Products Company, 800 North Lindbergh Blvd., C3NF, St. Louis, Mo. 63166 (314) 694-1000 RI-O1D

Proven over 15 years

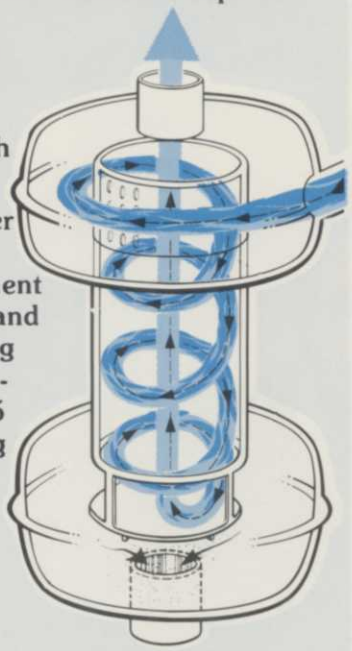
A better way to remove sand from water.

The Old hydrocyclone (left) did a good job. But our separator (at right) is better. No high speed abrasion. No plugging the apex. No screens or filter elements to clean or replace.



No downtime or routine maintenance. No continuous loss of water and no high pressure losses.

It's simply a better way to protect irrigation equipment and pumps from sand and grit by removing up to 98% of all particles as small as 325 mesh. There's nothing else quite like it.



deserves a *new* name all its own.

It just seemed the easiest way to make sure you won't confuse us with anyone else. So now it's Lakos Separators instead of Laval Separators. Same people . . . same dependable equipment . . . new name. Through four generations, 39 patents and spanning over 100 years, the Laval family name is still one you can trust . . . now in sand separation with Lakos Separators. Free literature and the name of your nearest distributor are yours for the asking.

LAKOS SEPARATORS USA

Claude Laval
CORPORATION

1911 N. Helm • Dept. J-1 • Fresno, Ca. 93727 • (209) 255-1601

Circle **125** on free information card

WT&T CLASSIFIEDS

FOR SALE *from page 92*

2 — JACOBSEN 9 gang F-20 mowers excellent condition, 1973 model and 1976 model. Fountainhead Sod 81008, 6421 Overton Road, Pueblo, Colo. 81008. 303 544-1230 or 544-1235.

BROUWER SOD HARVESTER 18" rolls on Massey 135 diesel, uses 4' x 4' pallets. Very good condition. Schneider Turf Farm, R9, Quincy, Ill. 217 224-1893.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. McKay Golf & Country Club Properties, 15553 N. East St., Lansing, Michigan 48906. Phone 517 484-7726.

LEARN LANDSCAPING and the Growing of Plants at home. Start a satisfying business or hobby. Free booklet. Lifetime Career Schools, Dept. A-601, 2251 Barry Avenue, Los Angeles, Ca. 90064.

WANTED TO BUY

SEMCO GRAVE DIGGING MACHINE. Used, in good condition. Buyer must provide one year warranty. Write Box 55136, Coon Rapids, Mn. 55433.

LANDSCAPE EQUIPMENT: Jacobsen power seeder, aerator, York rakes, pulverizers, trailers,loaders, sprayers, etc. Must be reasonable. Send description to: Kurt, 968 Mentor Avenue, Painesville, OH 44077.

BECK BIG ROLL sod harvester, any condition. Call collect 716 343-2828.

BUCKET TRUCK WANTED, 55-60 feet. A-1 shape, reasonable. 417 451-2610.

POSITION WANTED

LAWN SERVICE PRO 30 years horticultural experience, 8 years in lawn service business service and management, looking for challenging position, present salary $30,000, age 43. Box 218, Weeds, Trees and Turf, Box 6951, Cleveland, Ohio 44101.

POSITION WANTED: Arborist, landscape construction, irrigation. 16 years experience, 10 as foreman; 2 in management. Very versatile. For resume, contact P.O. Box 217, Weeds, Trees and Turf, Box 6951, Cleveland, Ohio 44101.

NURSERY STOCK

MILLIONS OF SEEDLINGS: High quality of reasonable prices. Over 100 selections for Christmas trees, ornamentals, windbreaks, conservation, wildlife food and cover, etc. Free catalog. Carino Nurseries, Box 538B, Indiana, PA 15701.

Professional tree care isn't simple any more that's why Mauget holds Tree Injection Seminars

Let's face it. The more you know about tree care, the better the professional job you can do for your customers. Mauget tree injection seminars tackle the tough problems faced in your business.

Seminars provide a constant updating of new information to keep your business progressively up to date. Topics include: new product registrations, a new slide-talk on injection techniques, EPA experimental labels, results of current research, training in the use of INJECT-A- CIDE® B for systemic insect control, business management, local advertising, and other problem areas.

Don't wait. This once a year business opportunity is well worth the time.

Plan Now To Attend. Each tree care firm who purchased Mauget capsules in 1978 will receive one free registration. Choose the location nearest you. Seminars begin at 9:00 a.m. Open to all arborists, city foresters, tree care firms, landscape contractors, golf superintendents, and grounds managers. Mauget Tree Injection products are field and university proven.

February

23 Peoria, IL
Continental Regency Hotel

March

5 Charlotte, NC
Howard Johnson
I-77 and Woodlawn Rd.

6 Atlanta, GA
Holiday Inn—
Atlanta North/Marietta
I-75, Lockheed-Dobbins Exit

7 Nashville, TN
Ramada Inn-Airport 2
I-24 & I-40, Murfreesboro Exit

8 Louisville, KY
Holiday Inn-South
I-65 & Fern Valley Rd.

9 Watertown, NY
Holiday Inn
300 Washington St., Rt. 11

9 Erie, PA
Holiday Inn-South
I-90 & Rt. 97, Exit 7

10 Albany, NY
Albany Colonie Sheraton
Inn-Airport
200 Wolf Rd.; I-87, Exit 4

10 Monroeville, PA
(Pittsburgh area)
Sheraton On-The-Mall
Pa. Turnpike, Exit 6

12 Richmond, VA
Ramada Inn-South
I-95, Exit 6A, Willis Rd.

13 Gaithersburgh, MD
Washingtonian Motel &
Country Club
I-270 & Shady Grove Rd.

14 Hershey, PA
Hershey Hotel

15 Paramus, NJ
Holiday Inn-Paramus,
Garden State Parkway,
Exit 165 N.

15 Princeton, NJ
Holiday Inn
U.S. 1 at Kingston &
Plainsboro Jughandle

16 Mellville, L.I. NY
Musicaro's of Mellville
Rt. 110

17 New Rochelle, NY
Sheraton Plaza Inn
1 Sheraton Plaza
I-95, Exit 8

20 Cincinnati, OH
Holiday Inn—Northeast
I-71 at Fields-Ertel Rd.

21 Indianapolis, IN
Stouffers Inn
2820 N. Meridan

22 Concord, CA
Holiday Inn

22 Lansing, MI
Hilton Inn
I-96 at Saginaw St. Exit

23 Cleveland, OH
Brown Derby Inn
Ohio Turnpike,
Exit 12 & Rt. 8

24 Binghamton, NY
Holiday Inn, Awley St.
N.Y. 17, Exit 72
Front St. South

24 State College, PA
Holiday Inn
Rt. 322 South

April

3 Milwaukee, WI
Red Carpet Inn
At Milwaukee Airport

5 Sioux Falls, SD
Ramada Inn, At Airport

7 Rochester, NY
Sheraton Inn South
I-90 & Rt. 15, Exit 46

14 Syracuse, NY
Holiday Inn North
Exit 36, I-90 & I-81

save trees

MAUGET tree injectors

800-423-2699

SEND THIS REGISTRATION COUPON OR FACSIMILE TODAY

TO: J. J. MAUGET COMPANY, P.O. Box 3422, Burbank, CA 91504

Registration fee—$12 per person (wives $6) includes coffee, danish, lunch. Each firm who purchased Mauget capsules in 1978 will receive one *free* registration. Make checks payable to J.J. Mauget Company. No confirmations. In event meeting is rescheduled for any reason, notification will be by phone, if number is provided.

Please reserve _____ places at the _____ meeting.
(location)

☐ Check here for *free* registration

Distributor's Name _____

Name (s) _____

Representing _____

Address _____

Phone _____

Don't Let Contamination Eat Up Turfgrass Profits.

Five Ways to help increase profits with Hendrix & Dail Custom Solid Tarp Fumigation.

First, it's faster. Our experience and our equipment help us to fumigate your land as much as five days faster than other fumigation methods.

Second, it's more effective because the solid tarp traps fumigants. They sink in and decrease chances of recontamination.

Third, it can kill seeds as well as insects, nematodes, and diseases. Fall fumigation can kill hard-to-kill seeds like henbit, buttonweed, and filaree.

Fourth, special problems are no problem. We're experts in soil fumigation. That's our only business. Let us tackle your hard-to-solve problems.

Fifth, you can do it yourself. We'll rent you the equipment you need. Or we'll fumigate for you.

Hendrix & Dail
The soil fumigation specialists.
P.O. Box 631 Greenville, North Carolina 27834
Telephone: (919) 758-4263

Circle **127** on free information card

WT&T EVENTS

International Erosion Control Association 10th Conference, Sea-Tac Red Lion Motor Inn, Seattle, Wash., **Mar. 1-2.** Contact: Bob Fischbach, Secretary-Treasurer, P.O. Box 807, Freedom, CA 95019, phone: 408/722-5315.

30th Annual Canadian Turf Show, Chateau Halifax, Halifax, Nova Scotia, **Mar. 4-7.** Contact: Canadian Golf Course Superintendents Association, 698 Weston, Rd., Suite 32, Toronto, Ontario M6N 3R3, phone: 416/767-2550.

Eleventh Annual Professional Turf and Plant Conference, Salisbury Restaurant, Eisenhower Park, East Meadow, Long Island, N.Y., **Mar. 6.** Contact: Pat Voges, 59 Orinoco Dr., Bay Shore, NY 11718.

The Irrigation Association Short Course Program, Turf Irrigation, Calgary, Alberta, Canada, **Mar. 6-8.** Call: 301/871-1200.

Landscape Maintenance Short Course, North Carolina State University, Collett Street Recreation Center, Collett St., Morganton, N.C., **Mar. 6-7.** Contact: M. A. Powell, Ext. Horticultural Specialist, NCSU, Kilgore Hall, Raleigh, NC 27607.

Reinders 4th Turf & Irrigation Conference — Equipment Show — Service Clinic, **Mar. 6-8.** Contact Ed Devinger, Reinders Bros., Inc., 13400 Watertown Plank Rd., Elm Grove, WI 53122, 414/786-3300.

Corrugated Plastic Tubing Association Annual Convention, Pier 66, Ft. Lauderdale, Fla., **Mar. 12-14.** Contact Robert Lowe, executive secretary, CPTA, 752 Leisure Lane, Greenwood, Ind., 46142, phone: 317/881-4552.

Midwest Turf Conference, Purdue University, West Lafayette, Ind., **Mar. 12-14.** Contact: Dr. William H. Daniel, Department of Agronomy, 2-443 Lilly Hall, West Lafayette, Ind., 47907, phone: 317/749-2891.

Canada Chapter, International Society of Arboriculture, Royal Connaught Hotel, Hamilton, Ontario, **Mar. 14-17.** Contact: E. C. Bundy, phone: 217/328-2032.

Landscape Maintenance Short Course, North Carolina State University, Mecklenburg County Agricultural Center, 301 Billingsley Rd., Charlotte, N.C., **Mar. 20-21.** Contact: M. A. Powell, Ext. Horticultural Specialist, NCSU, Kilgore Hall, Raleigh, NC 27607.

1979 Chicago Flower and Garden Show, McCormick Place, 23rd St. and South Lake Shore Dr., Chicago, Ill., **Mar. 24-Apr. 1.** Contact: Chicago Flower and Garden, Show Offices, 18 S. Michigan Ave., Chicago, IL 60603, phone: 312/786-0282.

West Virginia Vegetation Management Association Annual Meeting, Charleston House, Holiday Inn, Charleston, W.Va., **Mar. 27-29.** Contact: S. E. Robie, P.O. Box 1986, Charleston, WV 25327.

The current issue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 9800 Detroit Ave., Cleveland, OH 44102.

WE RECOMMEND LESCOSAN

In two seasons, we reduced the crabgrass population from 90%-plus to less than 10%. And this is on big lawns of almost an acre. Lescosan is the mainstay of our crabgrass control program.

—JOHN R. LINKHART
Perf-A-Lawn Vice-President (Sales)

As John R. Linkhart knows, Lescosan is the answer to pre-emergence crabgrass control. The undeniable proof exists in every application.

"Nashville is the premier area for crabgrass. And Lescosan is the main-stay of our crabgrass control program. It works better on crabgrass and foxtail than any other product."

The Perf-A-Lawn professional chemical lawn maintenance company specializes in liquid spray applications and they're building more than turf. They're building a reputation.

"Since we are constantly expanding our franchise market, we must be sure a product works. So we recommend Lescosan to our franchisees."

Lescosan (Betasan*), available in 4E emulsion or 12.5 granules, provides full-season effectiveness on all grasses, as well as on a number of ornamentals and ground covers. When Perf-A-Lawn buys Lescosan from Lakeshore, they buy from the formulator. And for Perf-A-Lawn, that means quality and savings!

If quality, savings and performance are selling Lescosan to you, take advantage of our toll-free information service and call Barb today. Those east of the Mississippi can reach her by dialing 1-800-321-5951. (In Ohio, dial 1-800-362-7413.) If you're west of the Mississippi, call Barb collect at 216-323-7544.

She'll have our representative contact you so you'll know why Perf-A-Lawn recommends Lescosan and how our other fine LESCO Products (including LESCO 36 Sulfur Coated Urea) are selling themselves every day!

Our LESCO Quality Products and Friendly Service are always as close as your phone.

*(Betasan—Registered TM of Stauffer Chemical Company.)

LESCO PRODUCTS

Division of Lakeshore Equipment & Supply Co.

300 S. ABBE ROAD, ELYRIA, OHIO 44035

A FAMILY OF FINE PRODUCTS—Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—Lescopar—Lescopex—Lesco Non-Selective Herbicide
Lesco MSMA—Lesco Thiram 75W—Lescozyme—Lakeshore Chinch Bug & Sod Webworm Control

HYDROGRASSING & POWER MULCHING EQUIPMENT

HG-15 Hydrograsser

Power, Precision, Performance. The HG-15 is ideal for applying fiber mulch, seed and fertilizer in one operation. Covers as much as three acres per load of granular solids in 12 to 20 minutes. Reinco's jet agitation system insures against clogging. Less down time for maintenance. HG-15. . . the profit producer.

M-80C Trailer Mounted Power Mulcher

Higher production. Lower maintenance. Heavy-duty M-80C handles a quarter of a million pounds of hay per day. Accurate distribution up to 95 feet. Equipped with straight through drive, M-80C has more power, needs less maintenance.

TM7-30(X) Trailer Mounted Power Mulcher

The TM7-30 (X) spreads 4 tons of hay per hour. Blows hay mulch up to 60 feet. TM7-30 (X) is also equipped with straight through drive. Discharge spout moves 360° horizontally, 60° vertically. Trailer mount permits on-site mobility, eliminates truck tie-up.

We Make It Easy

Reinco

Reinco

P.O. Box 584
Plainfield, New Jersey 07061
(201) 755-0921

Circle **171** on free information card

WT&T

ADVERTISERS

Adelphi Kentucky Bluegrass 23
Agro-Chem 64-66
American Garden Cole 86
Big Trees Today Inc. 78
Bowie Industries Inc. 72
Brouwer Turf Equip. Ltd. 55, 87
Broyhill Co. 86
Canadian Ind. Ltd. 31
Ciba-Geigy 84, 85
Crystal Chemical Co. 41
Cushman, OMC/Lincoln 28, 29
Dedoes Ind. 53, 73
Deere & Co., John 4
Ditch Witch, Div. Charles Machine Works 75
Diamond Shamrock 68, 69
Dynamic Ind. 83
Elanco 6, 7, 39
Eversman Mfg. Co. 88
E-Z Go 50-51
Ford Motor Co., Tractor Div. 42, 43
Foxcroft Development Co. 37
Grass Growers 92
Groundhog 79
Hendrix & Dail 96
Hercules 91
Howard Price Turf Equip. 67
HMC Green Machine 46, 47
Hypro Pumps, Div. Lear Siegler 80
International Seed Co. 25
International Spike Inc. 61
Jacklin Seed Co. 15
Jacobsen Mfg. Co. 34, 35
Johns-Manville 76, 77
F.D. Kees Mfg. Co. 74
Lakeshore Equip. & Supply Co. .. 13, 97
Laval Separator Corp. 94
Lifetime Career Schools 80
Lofts Pedigreed Seed Co. ..... Cover 4
J.J. Mauget 95
Master Spray Equip. Co. 53
Mathews Co. 58
Merck 89
Mitts & Merrill Inc. 70
Micron West 74
Monsanto Chemical Co. 93
Moridge Mfg. Co., Grasshopper 22
Mott Corp. 79
North American Plant Breeders 18
Occidental Chemical Co., Best Products Div. 62
Olin Corp. 82
PBI Gordon Corp. 56, 57
RainBird 21, 49
Reinco 24, 98
Ross Daniels Inc. 10
Ryan Turf Equip. 40
Solo Motors 88
S.P.I.C. ..... Cover 2, 3
Stanford Seed Co. 45
Tee-2-Green Corp. ..... Cover 3
Telsco Ind., Weathermatic 33
3M Co. 8
Tuflex Mfg. Co. 90
U.S. Gypsum 71
Vermeer 14

Advertising Sales Offices

HEADQUARTERS
9800 Detroit Ave.,
Cleveland, OH 44102.
216+651-5500.
Richard J. W. Foster,
General Manager.

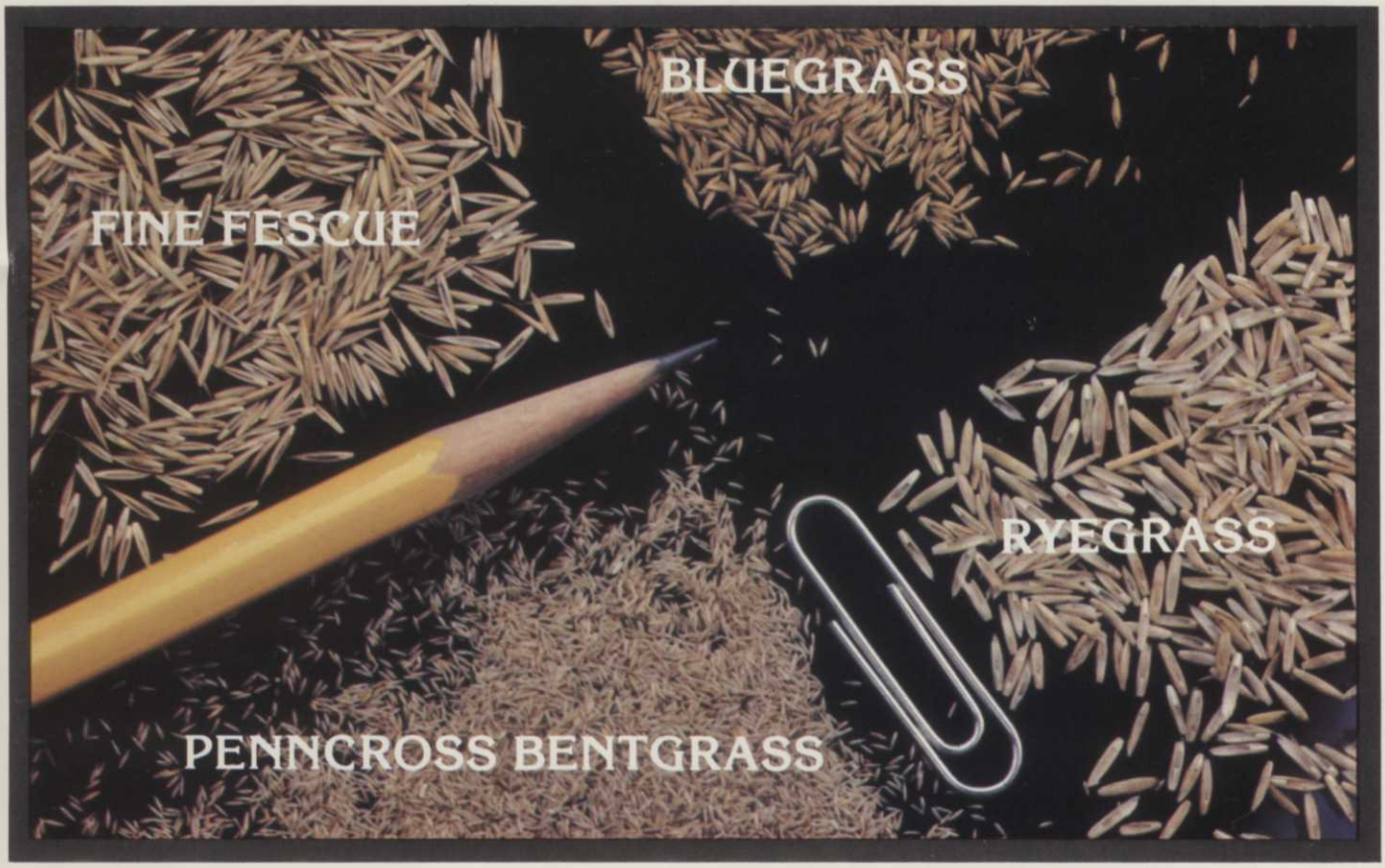
NEW YORK
757 Third Ave.,
New York, NY 10017
212+421-1350.
Brian Harris,
Eastern Manager.

CHICAGO
333 N. Michigan Ave.
Chicago, IL 60611.
312+236-9425.
Joe Guarise, Jeff Dreazen

ATLANTA
3186 Frontenack Court, NE,
Atlanta, GA 30319.
404+252-4311.
Richard Gore, Sales Manager.

SEATTLE
1333 N.W. Norcross
Seattle, WA 98177
206+363-2864
Robert A. Mierow

PENNCROSS makes a POINT



Penncross costs less, seed for seed, than Annual Ryegrass.

Points on Penncross

1. **Penncross Creeping Bentgrass** required years of selecting and crossbreeding to develop. This unique grass is especially designed for the demands of golf courses.
2. **Penncross** is grown under a strict certification program by elite seed growers in Oregon's Willamette Valley, where the highest quality seed is produced.
3. **Penncross** is a true polycross hybrid bentgrass developed for superior turf and greater disease resistance.

But, did you know, Penncross costs less, seed for seed, than annual ryegrass? For example, if you purchased a pound of annual ryegrass (approximately 200,000 seeds) for 30 cents, you would have to pay $12 for as many ryegrass seeds as you would receive in one pound of **Penncross** (approximately 8,000,000 seeds).

Write for FREE INFORMATION:

- Use of USGA's film, "ABC's of Putting Green Construction"
- Free copy of our new greens maintenance booklet "Problems or Progress"
- List of Penncross Co Marketers

PENNCROSS BENTGRASS GROWERS ASSOCIATION
1349 Capital St. NE
Salem, Oregon 97303

TEE2GREEN CORP.
World-wide distributor
1212 West 8th Street
Kansas City, MO 64101
816/842-7845

PENNCROSS BENT GRASS

Be PENNy wise... PENNCROSS

5,000,000 POUNDS Sold Worldwide

4,000,000

3,000,000

2,000,000

1,000,000

0

1973 1975 1976 1977 1978

baron
KENTUCKY BLUEGRASS

Baron Outsells Merion by more than 10 to 1!

No Wonder:
Quicker Germination
Less Fertilization Required
Greater Disease Resistance
More Widely Adaptable
Less Expensive

Merion
KENTUCKY BLUEGRASS

LOFTS

Lofts Pedigreed Seed, Inc.
Bound Brook, N.J. 08805/(201) 356-8700

Lofts/New England
Arlington, Mass. 02174
617-648-7550

Great Western Seed Co.
Albany, Ore. 97321
503-926-2636

Lofts Kellogg Seed Co.
Milwaukee, Wis. 53201
414-276-0373

Lofts/New York
Cambridge, N.Y. 12816
518-677-8808

Lofts/Maryland
Landover, Md. 20785
301-322-8111

Oseco Ltd.
Brampton, Ont. Can.
416-457-5080

Merion production figures taken from "Seed Crops" published by U.S. Dept. of Agriculture, Crop Reporting Board, Washington, D.C. Baron production figures supplied by Barenbrug Holland and Lofts Pedigreed Seed, Inc.

Circle **144** on free information card